Dear customer

Thank you for purchasing this product. For optimum performance and safety, please read these instructions carefully.

Before connecting, operating or adjusting this product, please read these instructions completely. Please keep this manual for future reference.

Region number supported by this unit

Region numbers are allocated to DVD players and software according to where they are sold.

- The region number of this unit is "1".
- The unit will play DVDs marked with labels containing "1" or "ALL".

Example:

For U.S.A. only
The warranty can be found on page 52.
For Canada only
The warranty can be found on page 53.

La referencia rápida en español se puede encontrar en la página 54.
**Getting Started**

**The Following Applies Only in the U.S.A.**

**Note to CATV System Installer:**

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

**The Following Applies Only in the U.S.A.**

**FCC Note:**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, follow the attached installation instructions and use only shielded interface cables when connecting to peripheral devices.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**IMPORTANT SAFETY INSTRUCTIONS**

Read these operating instructions carefully before using the unit. Follow the safety instructions on the unit and the applicable safety instructions listed below. Keep these operating instructions handy for future reference.

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.
12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
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#### Useful features
This DVD Video recorder records high quality images to rapid random access capable HDD (Hard disk drive) or DVD-RAM. This has resulted in many new features that out perform older tape formats. The following information summarizes a few of these features.

**Instant recording**
You no longer need to search for empty disc space. By pressing the recording button, the unit finds available recording space and begins recording right away. There is no need to worry about overwriting already recorded content.

**TV Guide On Screen**
The TV Guide On Screen system provides a handy electronic program guide (EPG) for checking what’s on. Setting up to record a broadcast is easy too. Simply select the desired program from the displayed list. You can also search for desired programs alphabetically or by displaying only the programs in a certain category.
- TV Guide On Screen is available in the continental United States. In Canada, however, it is under development and may not function properly.

**HDD recording**
You can keep on recording your favorite programmes to an internal HDD that is able to record up to 213 hours when using EP (8 Hour) mode. You can also high speed transfer (dub) your favorite programmes to DVD-RAM or DVD-R and create a backup disc.

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Accessories

Please check and identify the supplied accessories. Use numbers indicated in parentheses when asking for replacement parts.

Only for U.S.A.: To order accessories, refer to “Accessory Purchases” on page 52.

Only for Canada: To order accessories, call the dealer from whom you have made your purchase.

1 Remote control (EUR7721KG0)

1 AC power supply cord (K2CB2CB00006)

1 75 Ω coaxial cable (VJA1125)

2 Batteries for remote control

(for remote control only)

1 Audio/video cable (K2KA6CA00001)

1 IR Blaster (K2ZZ04C00001)

For use with this unit only. Do not use it with other equipment.

Product Registration Card

Please complete and return the included product registration card, or register via the Internet at: http://www.prodreg.com/panasonic

The remote control

Batteries

Available types: R6/LR6, AA, UM-3

- Insert so the poles (+ and −) match those in the remote control.
- Do not use rechargeable type batteries.
- Do not mix old and new batteries.
- Do not use different types at the same time.
- Do not heat or expose to flame.
- Do not take apart or short circuit.
- Do not attempt to recharge alkaline or manganese batteries.
- Do not use batteries if the covering has been peeled off.

Mishandling of batteries can cause electrolyte leakage which can damage items the fluid contacts and may cause a fire.

Remove if the remote control is not going to be used for a long period of time. Store in a cool, dark place.

Note

If you cannot operate the unit or television using the remote control after changing the batteries, please re-enter the codes (page 12, 13).

The manufacturer accepts no responsibility and offers no compensation for loss of recorded or edited material due to a problem with the unit or recordable media, and accepts no responsibility and offers no compensation for any subsequent damage caused by such loss.

Examples of causes of such losses are:

- A disc recorded and edited with this unit is played in a DVD recorder or computer disc drive manufactured by another company.
- A disc used as described above and then played again in this unit.
- A disc recorded and edited with a DVD recorder or computer disc drive manufactured by another company is played in this unit.
Remote control

- Turn the unit on (page 10)
- Input select (L1, L2 or L3)
- Select channels and title numbers, etc.
- Enter numbers
- Cancel

Basic operations for recording and play
- Show Top menu/Direct Navigator (page 24, 30)
- Show sub menu (page 30)
- Show on-screen menu (page 28)
- Show timer recording schedule (page 20)
- Erase items (page 26)
- Changing the size of information window (page 23)
- One touch transfer (dubbing)"Blue" button for television program list (page 36, 19)

Main unit

- POWER button (POWER ON/OFF) (page 10)
- Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
- Disc tray (page 16, 24)

Display (below)
- Lights when the HDD or DVD drive is selected

Connection for camcorder, etc. (page 18)
- Lights when the HDD or DVD drive is selected

The unit's display

Recording mode

HDD indicator

Timer recording indicator

Transferring (dubbing) in progress indicator

Disc type

D.MIX (multi-channel DVD-Audio only)
- When lit: Down-mixed audio is played.
- When off: The disc prevents down-mixing so only the two front channels can be played.
**STEP 1 Connection**

- **Examples of equipment you can connect to this unit’s terminals**

  - **Television**
  - **Amplifier**
  - **Cable TV box/satellite receiver**
  - **Video cassette recorder**
  - **Camcorder**

  ![Connection Diagram](connection-diagram.png)

- **When the unit is not to be used for a long time**
  To save power, unplug it from the household AC outlet. This unit consumes a small amount of power, even when it is turned off (approx. 15 W).

- **Do not place the unit on amplifiers or equipment that may become hot.**
  The heat can damage the unit.

- **Before moving the unit, ensure the disc tray is empty.**
  Failure to do so will risk severely damaging the disc and the unit.
The equipment connections described are examples.
Before connection, turn off all equipment and read the appropriate operating instructions.
Peripheral equipment and optional cables sold separately unless otherwise indicated.

### Connecting a television and VCR

- **A** to **C** are indexes for Spanish Quick Reference.

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Indicates included accessories.</td>
</tr>
<tr>
<td>B</td>
<td>Indicates accessories not included.</td>
</tr>
<tr>
<td>1 - 4</td>
<td>Required connections. Connect in the numbered order.</td>
</tr>
</tbody>
</table>

#### 75 Ω coaxial cable
The picture and sound signal from this unit does not go through the 75 Ω coaxial cable to the television. Make sure you connect one of the following terminals on this unit to the television: the AUDIO/VIDEO OUT terminal, the S-VIDEO OUT terminal or the COMPONENT VIDEO OUT terminal. If the television has none of these terminals, consult your local dealer.

- When connecting to a television with a built in VCR, connect to the input terminals on the television side, not the VCR side.

- When making this connection, ensure you connect the audio cables to the corresponding audio input terminals on the television.

#### S-VIDEO OUT terminal
The S-VIDEO OUT terminal achieves a more vivid picture than the VIDEO OUT terminal. (Actual results depend on the television.)

#### COMPONENT VIDEO OUT terminal
These terminals can be used for either interlace or progressive output (➡ page 46) and provide a purer picture than the S-VIDEO OUT terminal. ●Connect to terminals of the same color.

Do not connect the unit through a video cassette recorder
Video signals fed through video cassette recorders will be affected by copyright protection systems and the picture will not be shown correctly on the television.

- To household AC outlet (AC 120 V, 60 Hz)
- AC power supply cord
  - Connect only after all other connections are complete.
- To OUT1 or OUT2
- To the antenna
- Outdoor antenna
- Indoor antenna
- Antenna cable
- Splitter
- To L1
- Video cassette recorder
- COMPONENT VIDEO OUT terminal
  - Use a splitter if you also want to connect the antenna to your VCR.
STEP 1 Connection

Connecting a cable TV box/satellite receiver

- You need to subscribe to a cable TV or satellite TV service to enjoy viewing their programming.
- Consult your service provider regarding appropriate cable TV box or satellite receiver.
- This unit is not compatible with TV Guide On Screen systems broadcast by satellite.

A to G are indexes for Spanish Quick Reference.

For more information on connections (➡ page 7)

Should I use the AUDIO/VIDEO OUT terminal or the RF OUT terminal?

If your cable TV box/satellite receiver has both AUDIO/VIDEO OUT terminals and RF OUT terminals, we recommend connecting the AUDIO/VIDEO OUT terminal with the unit’s L3 terminal. Using this connection provides better picture quality.
- The S-VIDEO terminal achieves a more vivid picture than the VIDEO terminal.

Setting the IR Blaster

Place the IR Blaster in front of the signal sensor of the cable TV box.

Read the cable TV box operating instructions regarding positioning of the signal sensor.

If necessary, use the double sided adhesive tape (included) to secure the IR Blaster to a flat surface.

If you peel off the adhesive tape, the surface may become damaged. Once you have confirmed the cable TV box is operating correctly, secure it by attaching the adhesive tape.
Connecting an amplifier or system component

- Connection to a stereo amplifier

To enjoy multi-channel surround sound on DVD-Video

Connect an amplifier with a built-in decoder displaying these logo marks using an optical digital audio cable and change the settings in "Digital Audio Output" (⇒ page 42).

- You cannot use DTS Digital Surround decoders not suited to DVD.
- Even if using this connection, output will be only 2 channels when playing DVD-Audio.

If the antenna connector doesn’t match

Other antenna connections to the unit
Use one of the following connections to suit the antenna lead.
- If your television has both lead and coaxial VHF terminals, use the lead connection to minimize signal loss.
- A single twin lead
  - (Flat) Twin lead 300 Ω cable
  - 300–75 Ω transformer
  - To this unit’s RF IN terminal
  - from the antenna

- A twin lead and a coaxial cable
  - (Flat) Twin lead 300 Ω cable
  - VHF/UHF band mixer
  - To this unit’s RF IN terminal
  - from the antenna

- Two twin leads
  - (Flat) Twin lead 300 Ω cable
  - 300–75 Ω transformer
  - To this unit’s RF IN terminal
  - from the antenna

Other antenna connections from the unit to the television
Use one of the following connections to suit the antenna terminals on your television. Refer to the television’s operating instructions.
- A twin lead and coaxial plug terminal

- A twin lead terminal

- Two twin lead terminals

- Multiple antenna terminals
  - Connect to one of the ANT terminals, then change the television’s settings as necessary.
Getting started

STEP 2 Setting up the TV Guide On Screen system

After plugging the unit into your household AC outlet and pressing [DVD POWER] to turn the unit on for the first time, the unit starts TV Guide On Screen system setup.

Even if you do not want to use the TV Guide On Screen system, complete the setup. You cannot use timer recording unless the setup is completed.

Preparation
- Turn on the television and select the appropriate video input to suit the connections to this unit.
- When using the cable TV box, check the following.
  - Make sure the IR Blaster is connected and positioned properly (page 8).
  - Make sure the cable TV box is turned on.

1. Press [DVD POWER].

2. Following the on-screen messages, input the operating environment for your television.
   - Move the cursor using [ , , , , ] and press [ENTER] to confirm.
   - Press the numbered buttons to enter numbers.
   - Press [ENTER] to advance to the next screen.
   - Refer to the guidance on the bottom of the screen.

Set the following:
- Country (USA/Canada)
- ZIP (Postal) code
- Cable service connected to this unit (Yes/No)

Only English is displayed in the TV Guide On Screen system. Other languages cannot be displayed.

TV Guide On Screen system
This unit downloads a free television program list from a TV station and displays the list on the television screen. The list offers you many convenient functions such as timer recording (page 19) and so on (page 23).

Downloading the television program list
- The unit downloads the television program list only when the unit is turned off.
- When the unit is connected to a cable TV box, the cable TV box must be turned on in order to download the television program list.
- In order to cool the circuits used for downloading the television program list, sometimes the cooling fan operates when the unit is turned off. This is not a malfunction.
If you are using a cable TV box, set the following:

- Cable TV box connection channel (Ch2/Ch3/Ch4/L3)
  - If you are connecting the cable TV box to this unit’s L3 terminal, select “L3”.
  - If you are connecting the cable TV box to this unit’s RF terminal, select “Ch2”, “Ch3” or “Ch4”, according to the cable TV box setting.
- Cable TV box brand
  (Select “Not listed” if you cannot find your cable TV box on the list.)
- IR signal code
  Make sure your cable TV box is set to the channel that appears on screen and press [ENTER]. A test is performed.

If you find “There is no data for this screen” on the television when you turn the unit on, the unit has not yet downloaded the program list. This may take up to a maximum of 24 hours. Leave the unit turned off until the unit downloads the television program list.

Press [SETUP].

1 Press [SETUP].
2 Press [▲, ▼] to select “Set Up” and press [▶].
3 Press [▲, ▼] to select “Manual Clock Setting” and press [ENTER].
4 Press [◄, ►] to select the item you want to change and press [▲, ▼] to change the setting.
5 Press [ENTER].
6 Press [SETUP].

DST (Daylight Saving Time): ON or OFF
If you select “ON”, the clock is advanced one hour starting at 2 a.m. on the first Sunday in April and ending at 2 a.m. on the last Sunday in October.

TIME ZONE shows the time difference from Greenwich mean time (GMT).

EST (Eastern Standard Time) = GMT − 5
CST (Central Standard Time) = GMT − 6
MST (Mountain Standard Time) = GMT − 7
PST (Pacific Standard Time) = GMT − 8
AST (Alaska Standard Time) = GMT − 9
HST (Hawaii Standard Time) = GMT − 10

For a manual clock setting, Press [SETUP].

To use immediately (Manual Clock Setting)
Set the clock manually. However, the program list is not displayed until the unit downloads it. Timer program recording is only possible manually.

1 Press [SETUP].
2 Press [▲, ▼] to select “Set Up” and press [▶].
3 Press [▲, ▼] to select “Manual Clock Setting” and press [ENTER].
4 Press [◄, ►] to select the item you want to change and press [▲, ▼] to change the setting.
5 Press [ENTER].
6 Press [SETUP].

The set contents are displayed together

- Zip code - 11111 (USA)
- Cable - Yes
- Cable box - No
- If the information is correct, select “Yes, end setup” and press [ENTER].
- If the information is not correct, select “No, repeat setup process” and press [ENTER] to start the setting again.

Once you confirm the input content, the following screen appears.

What would you like to do now?
1 Watch TV

If you do not want to use TV Guide On Screen system page 43, Auto channel/clock settings

Press [SETUP].

Leave the unit turned off until the unit downloads the television program list. This may take up to a maximum of 24 hours.

- When the unit is connected to a cable TV box, the cable TV box must be turned on in order to download the television program list.
- When the unit is connected to a cable TV box, note that the television program list may not be downloaded correctly if you change the channel of the cable TV box while the unit is turned off.

If you find “There is no data for this screen” on the television when you turn the unit on, the unit has not yet downloaded the program list.

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**STEP 3** Set up to match your television and remote control

You do not have to change the setting when connected to a 4:3 standard aspect television that is not compatible with progressive output (page 46).

1. Press [SETUP].
2. Press [▲, ▼] to select “TV Screen” and press [►].
3. Press [▲, ▼] to select “TV Type” and press [ENTER].

You can configure the remote control TV operation buttons to turn the television on/off, change the television input mode, select the television channel and change the television volume.

Point the remote control at the television while pressing [POWER TV], enter the code with the numbered buttons. e.g., 01: [0] ➔ [1]

### Manufacturer and Code No.

<table>
<thead>
<tr>
<th>Television brand</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panasonic</td>
<td>00, 02</td>
</tr>
<tr>
<td>National</td>
<td>10</td>
</tr>
<tr>
<td>QUASAR</td>
<td>01, 02</td>
</tr>
<tr>
<td>SANYO</td>
<td>10</td>
</tr>
<tr>
<td>FISHER</td>
<td>10</td>
</tr>
<tr>
<td>GE</td>
<td>05</td>
</tr>
<tr>
<td>THOMSON</td>
<td>09</td>
</tr>
<tr>
<td>SHARP</td>
<td>06, 07</td>
</tr>
<tr>
<td>SAMSUNG</td>
<td>14, 18, 19</td>
</tr>
<tr>
<td>GOLDSTAR</td>
<td>15, 16, 17</td>
</tr>
<tr>
<td>SONY</td>
<td>08</td>
</tr>
<tr>
<td>HITACHI</td>
<td>12</td>
</tr>
<tr>
<td>SYLVANIA</td>
<td>03</td>
</tr>
<tr>
<td>JVC</td>
<td>11</td>
</tr>
<tr>
<td>THOMSON</td>
<td>09</td>
</tr>
<tr>
<td>LG</td>
<td>15, 16, 17</td>
</tr>
<tr>
<td>TOSHIBA</td>
<td>09</td>
</tr>
<tr>
<td>MAGNAVOX</td>
<td>03</td>
</tr>
<tr>
<td>ZENITH</td>
<td>04</td>
</tr>
<tr>
<td>MITSUBISHI</td>
<td>13</td>
</tr>
</tbody>
</table>

Test by turning on the television and changing channels. Repeat the procedure until you find the code that allows correct operation.

- If your television brand is not listed or if the code listed for your television does not allow control of your television, this remote control is not compatible with your television.

4. Press [▲, ▼] to select the item and press [ENTER].

To exit the screen, press [SETUP].

To return to the previous screen, press [RETURN].
When other Panasonic products respond to this remote control

Change the remote control code on the main unit and the remote control (the two must match) if you place other Panasonic products close together.
Use "1", the factory set code, under normal circumstances.

1 Press [SETUP].
2 Press [▲, ▼] to select “Set Up” and press [►].
4 Press [▲, ▼] to select the code (1, 2, or 3) and press [ENTER].

5 To change the code on the remote control
   While pressing [ENTER], press and hold the numbered button ([1], [2] or [3]) for more than 2 seconds.
6 Press [ENTER].

 lorsque the following indicator appears on the unit’s display

Change the code on the remote control to match the main unit’s (➡ step 5).

To exit the screen
Press [SETUP].

To return to the previous screen
Press [RETURN].
### Getting started

#### HDD and discs you can use for recording and play

<table>
<thead>
<tr>
<th>Type</th>
<th>Logo</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temporary storage</strong></td>
<td></td>
<td>• You can record up to 213 hours in EP (8H) mode (page 17, Recording modes and approximate recording times).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• You can perform chasing playback or Time Slip (page 17).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• You can record digital broadcasts that allow &quot;One time only recording&quot;. You can transfer (dub) a recorded title to a CPRM compatible DVD-RAM; however, the title is erased from the HDD. (page 46).</td>
</tr>
</tbody>
</table>

### Re-writable discs for backup use

<table>
<thead>
<tr>
<th>Type</th>
<th>Logo</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• You can record up to 16 hours in EP (8H) mode on double-sided disc. You cannot record or play continuously on two sides. (page 17, Recording modes and approximate recording times).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• You can perform chasing playback or Time Slip (page 17).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Scratch and dust resistant cartridge discs and large capacity double sided discs (9.4GB) are commercially available.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• You can record digital broadcasts that allow &quot;One time only recording&quot; when using CPRM (Content Protection for Recordable Media) compatible discs (page 46). You cannot transfer (dub) a recorded title.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• This unit is compatible with 1×–3× recording speed discs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• You can transfer (dub) up to 2× recording speed by using a high speed recording compatible disc (page 5).</td>
</tr>
</tbody>
</table>

### One time recording discs for backup use (recordable until the disc is full)

<table>
<thead>
<tr>
<th>Type</th>
<th>Logo</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• You can record up to 8 hours in EP (8H) mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• By finalizing the disc, you can play it in a DVD player as DVD-Video (Play only) (page 39, 46).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• You cannot record digital broadcasts that allow &quot;One time only recording&quot;.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• This unit is compatible with 1×–4× recording speed discs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• You can transfer (dub) up to 2× recording speed by using a high speed recording compatible disc (page 5).</td>
</tr>
</tbody>
</table>

### Which should I use, DVD-RAM or DVD-R?

The following chart indicates the differences. Select based upon what you require.

<table>
<thead>
<tr>
<th>(O:Possible, X:Impossible)</th>
<th>DVD-RAM</th>
<th>DVD-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-writable</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>Edit</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>Recording both Main and SAP of MTS broadcast</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>Recording broadcasts that allow one copy</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>Recording 16:9 aspect picture</td>
<td>O</td>
<td>X</td>
</tr>
</tbody>
</table>

---

### Notes

- You can erase, enter name and change thumbnail. Available space does not increase after erasing.
- Only on DVD-RAM compatible players.
- After finalizing the disc (page 39, 46).
- Only one is recorded (page 42, Select MTS).
- CPRM (page 46) compatible discs only.
- The picture is recorded in 4:3 aspect.

When "DVD-R High-Speed Recording" is set to "On" the restrictions on secondary audio recording, etc. are also applied to DVD-RAM. Turn this setting "Off" if high speed transfer (dubbing) to DVD-R is not necessary when recording a programme (page 41).

#### Protection (Cartridge discs)

With the write-protect tab in the protect position, you cannot record to, edit, or erase from the disc. Play automatically starts when inserted in the unit.
As a basic rule, save important video content to a DVD disc as a special device that is easily susceptible to damage. The HDD is a high precision recording instrument and because of its sensitivity to vibration, shock, or dust, it may become damaged. If there is an irregularity within the HDD, strange sounds or problems with picture (block noise, etc.) may result. Using the HDD in this condition may worsen the problem and in the worst case the HDD may no longer be usable. Especially during operation, do not subject the HDD to any vibration, shock, or dust. Household AC outlet. In the event of a power failure the content, recorded on the HDD, may no longer become usable. As soon as you notice this type of problem, save all content to the DVD disc.

**Disc handling**

- **How to hold a disc**
  Do not touch the recorded surface.

- **If there is dirt or condensation on the disc**
  Do not use cleaners for CDs or cloths.
  - RAM
  - DVD
  - Wipe with a damp cloth and then wipe dry.

- **Handling precautions**
  - Do not attach labels or stickers to discs. (This may cause disc warping and un-balanced rotation, rendering it unusable.)
  - Do not write on the label side with a ball-point pen or other writing instrument.
  - Do not use record cleaning sprays, benzine, thinner, static electricity prevention liquids or any other solvent.
  - Do not use scratch-proof protectors or covers.
  - Do not use the following discs:
    - Discs with exposed adhesive from removed stickers or labels (rented discs, etc).
    - Discs that are badly warped or cracked.
    - Irregularly shaped discs, such as heart shapes.
  - Do not place in the following areas:
    - In direct sunlight.
    - In very dusty or humid areas.
    - Near a heater.

**HDD (Hard disk drive) handling care**

The HDD is a high precision recording instrument and because of its long recording capability and high speed operation it is a very special device that is easily susceptible to damage. As a basic rule, save important video content to a DVD disc as backup.

- **The HDD is a device that is not built to withstand vibration/shock or dust**
  Depending on the setup environment and handling of the HDD some content may become damaged and play and recording may no longer be possible. Especially during operation, do not subject the HDD to any vibration, shock, or dust that may affect the unit. The HDD has automatically gone into SLEEP mode in order to extend the life of the HDD. (Even after turning the unit off, the HDD continues operating for a short time.)

- **The HDD is a temporary storage device**
  The HDD is not an everlasting storage device for recorded content. Use the HDD as a temporary storage place for viewing once, editing, or for saving to a DVD disc.

- **Immediately save (backup) all content as soon as you feel there may be problem with the HDD**
  If there is an irregularity within the HDD, strange sounds or problems with picture (block noise, etc.) may result. Using the HDD in this condition may worsen the problem and in the worst case the HDD may no longer become usable. As soon as you notice this type of problem, save all content to the DVD disc. Recorded content (data) on an HDD that has become unusable is unrecoverable.

**Setup precautions**

- Do not place in an enclosed area so the rear cooling fan and the cooling vents on the side are covered up.
- Place the unit on a surface that is flat and not subject to vibration or impact.
- Do not place on anything that generates heat like a video cassette recorder, etc.
- Do not place in an area often subject to temperature changes.
- Place in an area where condensation does not occur. Condensation is a phenomenon where moisture forms on a cold surface when there is an extreme change in temperature. Condensation may cause internal damage to the unit.
- **Conditions where condensation may occur**
  - When there is an extreme change in temperature (moving from a very hot location to a very cold location, vice versa, or when subjected to an air conditioner or when cooled air directly impacts the unit.) When the HDD (warms during operation) is subjected to cold air, condensation may form on the inside of the HDD and may cause damage to the HDD heads, etc.
  - When there is high humidity or a lot of steam in the room.
  - During the rainy season.
  - In the above situation, **without turning the unit on**, let the unit adjust to the room temperature and wait 2-3 hours until condensation is gone.

**HDD recording time remaining**

This unit records using a VBR (Variable bit rate) data compression system to vary recorded data segments to match video data segments which may cause differences in the displayed amount of time and space remaining for recording. If the remaining amount of time is insufficient, erase any unwanted titles to create enough space before you start recording. (Erasing a play list will not increase the amount of time.)

**Indemnity concerning recorded content**

Panasonic does not accept any responsibility for damages directly or indirectly due to any type of problems that result in loss of recorded or edited content (data), and does not guarantee any content if recording or editing does not work properly. Likewise, the above also applies in the case any type of repair is made to the unit (including any other non-HDD related component).
Recording television programs

1 Press [HDD] or [DVD] to select the recording drive.
The HDD or DVD indicator lights up on the unit.

2 If you selected the DVD drive
Press [OPEN/CLOSE] on the main unit to open the tray and insert a disc.
- Press the button again to close the tray.
- If you put a disc in while the HDD is selected, the DVD indicator on the unit will flash while the unit reads the disc.

3 Press [CH] to select the channel.
To select with the numbered buttons:

<table>
<thead>
<tr>
<th>TV Mode (Airwaves)</th>
<th>CATV Mode (Cable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g.: 5: [0] [5]</td>
<td>e.g.: 5: [0] [5]</td>
</tr>
</tbody>
</table>

- Select the audio to record (page 17).

4 Press [REC MODE] to select the recording mode (XP, SP, LP, or EP).

Remaining time on the disc
To record sound using LPCM (XP mode only): Set "Audio for XP Recording" to "LPCM" in the SETUP menu. (page 42)

5 Press [REC] to start recording.
Recording will take place on open space on the HDD or on disc. Data will not be overwritten.
- You cannot change the channel or recording mode during recording.

Note:
You can record while the unit is on standby for timer recording, but once the time for the timer recording to begin is reached, any recording taking place will stop and the timer recording will begin.

- To stop recording
Press [X].
Recorded as 1 title until the position where stopped.

- HDD
When continuously recording for long durations, titles are automatically divided every 8 hours.

- CATV
It takes about 30 seconds for the unit to complete recording management information after recording finishes.

- To pause recording
Press [II].
Press again to restart recording. (Title is not split into separate titles.)

- To specify a time to stop recording—One Touch Recording
During recording
Press [REC] to select the recording time.
Each time you press the button:
0:30 ➔ 1:00 ➔ 1:30 ➔ 2:00 ➔ 3:00 ➔ 4:00
Counter (cancel) ➔
- This does not work during timer recordings (page 19) or while using Flexible Recording (page 18).

- Off Timer
The unit switches to standby after about 6 hours in the stop mode. You can turn this feature off or change the time to 2 hours (page 40, "Off Timer").
Recording modes and approximate recording times

Depending on the content being recorded, the recording times may become shorter than indicated.

(Unit: hour)

<table>
<thead>
<tr>
<th>Mode</th>
<th>HDD (120GB)</th>
<th>DVD-RAM</th>
<th>DVD-R (4.7 GB)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single-sided (4.7 GB)</td>
<td>Double-sided (9.4 GB)</td>
<td>Double-sided (9.4 GB)</td>
</tr>
<tr>
<td>XP (High quality)</td>
<td>26</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>SP (Normal)</td>
<td>52</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>LP (Long play)</td>
<td>104</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>EP (Extra long play)</td>
<td>213 (160')</td>
<td>8 (6')</td>
<td>16 (12')</td>
</tr>
</tbody>
</table>


The sound quality is better when using “EP (6H)” than when using “EP (8H)”.

**Note**
When recording to DVD-RAM using EP (8H) mode, play may not be possible on DVD players that are compatible with DVD-RAM. In this case use EP (6H) mode.

FR (Flexible Recording Mode)
The unit automatically selects a recording rate between XP and EP (8H) that will enable the recordings to fit in the remaining disc space with the best possible recording quality.

- You can set when transferring (dubbing) or programming timer recordings.
- When recording to the HDD, picture quality is automatically adjusted to precisely fit a transferred (dubbed) title on a 4.7 GB disc.
- All the recording modes from XP to EP appear in the display.

Selecting audio to record

**HDD**
Press [AUDIO].

- **Stereo**: Main audio (stereo)
  - If the broadcast is "Mono+SAP", audio will be monaural even if you select Stereo mode.
- **SAP**: Secondary audio program (SAP)
  - If recorded in SAP mode, main audio is also recorded.
- **Mono**: Main audio (monaural)
  - Select "Mono" if reception is poor during a stereo broadcast.
  - e.g., "Stereo" is selected if the unit is receiving the audio type you selected.

- If you change the sound setting while recording, the recorded sound will also change.

**DVD-R**
(When recording sound in LPCM)

Select the audio (Main or SAP) in “Select MTS” in the SETUP menu (➡ page 42).
Recording television programs

Refer to the control reference on page 16.

Flexible Recording

The unit sets the best possible picture quality that fits the recording within the remaining disc space.

**Preparation**
- Select the channel to record.
- Press [HDD] or [DVD] to select the recording drive.

1. While stopped,
   Press [FUNCTIONS].

2. Press [▲, ▼, ◀, ▶] to select “FLEXIBLE RECORDING” and press [ENTER].

   - You can also set the recording time with the numbered buttons.
   - You cannot record more than 8 hours.

4. When you want to start recording,
   Press [▲, ▼, ◀, ▶] to select “Start” and press [ENTER].
   - Recording starts.
   - The recording mode becomes FR mode.

To exit the screen without recording
Press [RETURN].

To stop recording partway
Press [●].

To show the remaining time
Press [STATUS].

Almost all videos and DVD software on sale have been treated to prevent illegal copying. Any software that has been so treated cannot be recorded using this unit.
Timer recording

You can perform timer recording easily by just marking the desired program(s) in a television program list.

1. You can enter up to 8 days in advance.
2. The program name becomes the recorded title if the program is listed on the television program list.

1. Press [TV GUIDE].

2. Press [▲, ▼, ◀, ▶] to select the program.
   - To skip one screen: Press [PAGE / CH ▲].
   - To skip 24 hours in the list: Press [▲, ▼, ◀, ▶] to select "LISTINGS" and:
     - Press [CHAPTER] (Green) (forward).
     - Press [DUBBING] (Blue) (backward).

3. Press [CHAPTER] (Green).
   - "●" appears in the list to indicate that the program is set for recording.
   - Press [CHAPTER] (Green) to cancel.
   - Press [DUBBING] (Blue) to change recording frequency.
   - Each time you press the button:
     - **Records only once.**
     - **Records when the broadcast time and program name match from Monday to Friday.**
     - **Records weekly.**
     - **Temporarily cancels the program timer recording without deleting the program setting.**

Repeat steps 2–3 to program other recordings.

4. Change the setting as necessary and press [ENTER].
   - To set recording to start early or end late:
     - Press [▲, ▼] to select “Start early by” or “End late by” and press the numbered buttons to enter minutes (up to 99).
   - To change the recording mode:
     - Press [▲, ▼] to select “Quality” and press [DUBBING] (Blue).
     - Each time you press the button:
       - **Quality:** LP → EP → FR → XP → SP

   - To change the recording drive:
     - Press [▲, ▼] to select “Destination” and press [DUBBING] (Blue).
     - Each time you press the button:
       - HDD → DVD

     When the recording drive is "DVD" and there is not enough remaining space, recording automatically switches to the "HDD" (page 21, Relief Recording).

4. Press [TV GUIDE].

   Returns to the television screen.

   - The unit is not off. To save power, turn the unit off by pressing [DVD POWER].
   - When using the cable TV box, make sure the cable TV box is turned on.

To check, change or delete the program → page 22
To utilize TV Guide On Screen system, see also page 23.

Notes on timer recording → page 21

- As long as the setting is not changed, the program is recorded to the HDD in the recording mode selected by the unit. To change the setting → below.

To change the setting

1. Press [▲] several times to select "LISTINGS".
2. Press [▼, ◀] to select "SCHEDULE".
3. Press [▲, ▼] to select the program and press [ENTER].

<table>
<thead>
<tr>
<th>Start early by</th>
<th>End late by</th>
<th>Quality</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 minutes</td>
<td>30 minutes</td>
<td>SP</td>
<td>HDD</td>
</tr>
</tbody>
</table>

4. Change the setting as necessary and press [ENTER].

   - To set recording to start early or end late:
     - Press [▲, ▼] to select “Start early by” or “End late by” and press the numbered buttons to enter minutes (up to 99).
   - To change the recording mode:
     - Press [▲, ▼] to select “Quality” and press [DUBBING] (Blue).
     - Each time you press the button:
       - **Quality:** LP → EP → FR → XP → SP

   - To change the recording drive:
     - Press [▲, ▼] to select “Destination” and press [DUBBING] (Blue).
     - Each time you press the button:
       - HDD → DVD

When the recording drive is "DVD" and there is not enough remaining space, recording automatically switches to the "HDD" (page 21, Relief Recording).

Using the TV Guide On Screen system to make timer recordings

You can perform timer recording easily by just marking the desired program(s) in a television program list.

- You can enter up to 8 days in advance.
- The program name becomes the recorded title if the program is listed on the television program list.

1. Press [TV GUIDE].

2. Press [▲, ▼, ◀, ▶] to select the program.
   - To skip one screen: Press [PAGE / CH ▲].
   - To skip 24 hours in the list:
     - Press [▲, ▼, ◀, ▶] to select "LISTINGS" and:
       - Press [CHAPTER] (Green) (forward).
       - Press [DUBBING] (Blue) (backward).

3. Press [CHAPTER] (Green).
   - “●” appears in the list to indicate that the program is set for timer recording.
   - Press [CHAPTER] (Green) to cancel.
   - Press [DUBBING] (Blue) to change recording frequency.
   - Each time you press the button:
     - **Records only once.**
     - **Records when the broadcast time and program name match from Monday to Friday.**
     - **Records weekly.**
     - **Temporarily cancels the program timer recording without deleting the program setting.**

Repeat steps 2–3 to program other recordings.
Timer recording

1. Press [PROG/CHECK].

2. Press [CHAPTER] (Green).

3. Enter the settings.
   - To enter the date
     Press [-chan, +] to select “Date” and press the numbered buttons.
     (Date: Month/Day/Year)
   - To enter the time
     Press [-chan, +] to select “Start Time” or “End Time” and press the numbered buttons.
     - You can set up to 8 hours.
     - To change am/pm
       Press [2, 1] to select “am” or “pm” and press [DUBBING] (Blue).

4. Press [ENTER].

5. Press [TV GUIDE].

   Returns to the television screen.
   - The unit is not off. To save power, turn the unit off by pressing [DVD POWER].
   - When using the cable TV box, make sure the cable TV box is turned on.

Notes on timer recording ➞ page 21

To cancel recording when recording has already begun
Press [■], then [ENTER] within 5 seconds.
- You can also press and hold [■] on the main unit for more than 3 seconds to stop recording.

To program other recordings
Press [-chan, +, -] to select “RECORD” and repeat steps 2-4.

To enter the channel
Press [-chan, +] to select “Channel” and press the numbered buttons.
- To select the input channel (L1/L2/L3)

To change the recording mode
Press [-chan, +] to select “Quality” and press [DUBBING] (Blue).
Each time you press the button:
- LP ➔ EP ➔ FR ➔ XP ➔ SP

To change the recording drive
Press [-chan, +] to select “Destination” and press [DUBBING] (Blue).
Each time you press the button:
- HDD ➔ DVD

When the recording drive is “DVD” and there is not enough remaining space, recording automatically switches to the “HDD” (right, Relief Recording).

Manually programming timer recordings

1. Press [PROG/CHECK].

2. Press [CHAPTER] (Green).

3. Enter the settings.
   - To enter the date
     Press [-chan, +] to select “Date” and press the numbered buttons.
   - To enter the time
     Press [-chan, +] to select “Start Time” or “End Time” and press the numbered buttons.
     - You can set up to 8 hours.
     - To change am/pm
       Press [2, 1] to select “am” or “pm” and press [DUBBING] (Blue).

≥ To enter the date
Press [-chan, +] to select “Date” and press the numbered buttons.

≥ To enter the time
Press [-chan, +] to select “Start Time” or “End Time” and press the numbered buttons.
– You can set up to 8 hours.
– To change am/pm
Press [2, 1] to select “am” or “pm” and press [DUBBING] (Blue).
Using VCR Plus+ system to make timer recordings

Entering PlusCode® number is an easy way of timer recording. You can find them in TV listings in newspapers and magazines.

• You can enter up to 8 days in advance.
• VCR Plus+ system works only after this unit downloads the television program list (page 10).

1. Press [VCR Plus+].


3. Press the numbered buttons to enter the PlusCode number.
   • To correct the number
     Press [▲] and press [▼]. Enter the number again from the beginning.

4. Press [ENTER].

Repeat steps 1–4 to program other recordings.

• As long as the setting is not changed, the program is recorded to the HDD in the recording mode selected by the unit. To change the setting, see page 19. To change the setting, step 3.

5. Press [TV GUIDE].

Returns to the television screen.
• The unit is off. To save power, turn the unit off by pressing [DVD POWER].
• When using the cable TV box, make sure the cable TV box is turned on.

To cancel recording when recording has already begun

Press [■], then [ENTER] within 5 seconds.
• You can also press and hold [■] on the main unit for more than 3 seconds to stop recording.

Notes on timer recording

• “O” lights on the unit’s display to indicate that the unit is in timer recording standby.
• “O” flashes when the unit cannot go to timer recording standby.
• Timer recordings are activated regardless of whether the unit is turned on/off.
• Timer recordings begin when the set time is reached even when recording or when playing.
• Timer recordings do not begin while transferring (dubbing) in normal speed mode (page 35).
• When you program successive timer recordings to start immediately one after the other, the unit cannot record the part at the ending of the earlier program (approximately 15 seconds). In addition, when recording to DVD-R, the unit cannot record the part at the beginning of the later program (approximately 15 seconds).

• If you set DST (Daylight Saving Time) to ON when manually setting the clock (page 11), timer recording may not work when summer switches to winter and vice versa.

Relief Recording

When the recording drive is set to "DVD" for timer recording and if the program will not fit onto the disc, the recording drive will be changed to the "HDD" automatically.
• If there is no disc in the tray or the disc cannot be recorded on or when timer recording starts while transferring (dubbing), the recording drive will be changed to the HDD.
• The Direct Navigator shows which programs were relief-recorded ("■" is displayed) (page 24).
• If the time remaining on the HDD is insufficient, as much of the program as possible will be recorded onto the HDD.
Timer recording

- To change the recording frequency
  Press [CHAPTER] (Green).

- To change the time, recording mode and recording drive
  Press [ENTER]. (* page 19, To change the setting, step 5)

- To delete the program
  Press [DUBBING] (Blue).

- To exit the screen
  Press [TV GUIDE].
  Returns to the television screen.
  ● The unit is not off. To save power, turn the unit off by pressing [DVD POWER].

- When there is a duplicate or overlapping program timer recording
  The program timer recording that was set last is recorded. None of the program that was set earlier is recorded even if there is only partial overlapping.
  Program timer recordings that are not recorded are highlighted in grey.

![Remote control diagram]

Check, change or delete a program

1. Press [PROG/CHECK].

2. Press [▲, ▼] to select the program.

   Channel or program name (a program name that was set for timer recording using TV Guide On Screen system or VCR Plus+ system that was listed in the program list)

   ![Program list example]

   Recording mode (* page 17)  Frequency (* page 19, 20)

   Recording drive
Utilizing TV Guide On Screen system

Press [TV GUIDE].

Program viewed before the program list was opened.

On-screen guidance
The “Green” button refers to [CHAPTER] button. The “Blue” button refers to [DUBBING] button.

■ Selecting the program from the desired program category and setting timer recording
1 Press [A] several times to select “LISTINGS”.
2 Press [4, 5] to select “SORT” and press [ENTER].
3 Press [A, v] to select the major category and press [ENTER].
-When sorting alphabetically, press [ENTER] and [A, v] to select.
6 Press [CHAPTER] (Green).

■ Changing the size of information window
Press [Info] while the program is highlighted.

■ Adjusting the channel line-up
If the television program list’s channel line-up differs from what you were expecting, perform the following steps.
1 Press [A] several times to select “LISTINGS”.
2 Press [4, 5] to select “SETUP” and press [ENTER].
4 Press [A, v] to select “Yes, but my channel line-up is incorrect” and press [ENTER].
-When there is more than one cable network transmitting television program listings in the area where you are living, more than one channel line-up is displayed. Press [A, v] to select one and then press [ENTER].
-Alternatively, you can customize the channel line-up in the Channel Editor (= right, Customizing the channel line-up). Press [A, v] to select “No Match” and then press [ENTER].

■ Selecting the TV Guide On Screen system start up pattern
1 Press [A] several times to select “LISTINGS”.
2 Press [4, 5] to select “SETUP” and press [ENTER].
4 Press [A, v] to select the option and press [ENTER].
-“On” : Turns on auto start up.
-“Off” : Turns off auto start up.

■ Reading messages
1 Press [A] several times to select “LISTINGS”.
2 Press [4, 5] to select “MESSAGES” and press [ENTER].
-“Delete” : Press [CHAPTER] (Green) to remove the selected message.
-“Undelete” : To undelete a message, press [DUBBING] (Blue) and then press [CHAPTER] (Green) to select “OFF”.

■ Viewing TV Guide On Screen system explanations and promotions
1 Press [A] several times to select “LISTINGS”.
2 Press [4, 5] to select “PROMOTIONS” and press [ENTER].

■ Customizing the channel line-up
1 Press [A] several times to select “LISTINGS”.
2 Press [4, 5] to select “SETUP” and press [ENTER].
3 Press [A, v] to select “Change channel display” and press [ENTER].
4 Press [A, v] to select the channel.
-Press [PAGE v CH ] to skip one screen.

To hide the channel
Press [CHAPTER] (Green) to select “OFF”.

To change the channel number
Press the numbered buttons.

- e.g. 1: [0][0][1][1]
- 10: [0][1][1][5]
- 115: [1][1][1][5]

To change the order of the channels
1 Press [4].
2 Press [DUBBING] (Blue) to move up or [CHAPTER] (Green) to move down.

Repeat step 4 as necessary.
5 Press [TV GUIDE].

■ Registering a program you don’t want to miss as a “Favorite”
By registering a program as “Favorite” in advance, you can later tune in that program quickly by pressing [DUBBING] (Blue) when that program begins broadcasting.

When you cannot remember the television program you want to watch, we recommend you press [DUBBING] (Blue) when the television reception screen is displayed. This unit may tune in your desired program.[ON]

“Favorite” registration temporarily off.
- “Favorite” appears in the list to indicate that the program is set as a “Favorite”.
- Press [CHAPTER] (Green) to change the frequency.
- Each time you press the button:
  - Registers as “Favorite” only once.
  - For programs that broadcast Monday to Friday, a program becomes a “Favorite” when the broadcast time and program name match.
  - Registers as “Favorite” weekly.
  - “Favorite” registration temporarily off.
- Press [DUBBING] (Blue) to cancel.
- Repeat steps 1-3 to set other programs.
- When there is more than one program registered as “Favorite” in the same time frame, each time you press [DUBBING] (Blue), the program switches to the other.
Playing discs

1 Press [HDD] or [DVD] to select the playback drive.
   The HDD or DVD indicator lights up on the unit.

2 If you selected the DVD drive
   Press [OPEN/CLOSE] on the main unit to open the tray and insert a disc.
  ● Press the button again to close the tray.
   ● If you put a disc in while the HDD is selected, the DVD indicator on the unit will flash while the unit reads the disc.

3 Press [►] (PLAY).
   Play starts from the most recently recorded title.
   DVD RAM DVD-R
   Play starts from the beginning of the disc.

■ Selecting recorded programs (titles) to play
   HDD, DVD

1 Press [DIRECT NAVIGATOR].

2 Press [▲, ▼, ◀, ►] to select the title and press [ENTER].
   You can also select titles with the numbered buttons.
   e.g.,
   HDD
   5: [0] ➔ [0] ➔ [5]  15: [0] ➔ [1] ➔ [5]
   115: [1] ➔ [1] ➔ [5]

To exit the screen
   Press [DIRECT NAVIGATOR].

Direct Navigator screen icons

● Title protected.

● Title that was not recorded due to recording protection
   (Digital broadcasts, etc.)

● Title cannot be played
   [When transferring (dubbing) a title to the HDD, or when data is damaged, etc.]

● Currently recording.

● Titles that have been rerouted to the HDD
   (➡ page 21, Relief Recording)

● Title with “One time only recording” restriction

Direct Navigator appearance
   Two types of appearance are available, “Thumbnail Display” and “Table Display”.
   ● Switching the appearance
   1 Press [SUB MENU] while Thumbnail Display is displayed.
   2 Press [▲, ▼] to select “Table Display” and press [ENTER].

■ When a menu screen appears on the television
   DVD-A DVD-V
   Press [▲, ▼, ◀, ►] to select the item and press [ENTER].
   Some items can also be selected using the numbered buttons.

Press the numbered buttons to select the item.
   e.g.,
   HDD
   5: [0] ➔ [5]  15: [1] ➔ [5]

To return to the menu screen
   DVD-A Press [TOP MENU].
   DVD-V Press [TOP MENU] or [SUB MENU].
   HDD Press [RETURN].

Preparation
Press [RETURN] to exit the television program list if it is displayed on the television. To turn off auto start up of the television program list ➡ page 23, Selecting the TV Guide On Screen system start up pattern.

Insert label-up.
Insert fully so it clicks into place.

Insert with the arrow facing in.

It is possible to watch playback from one drive while recording from another (editing is not possible).
It is not possible to play continuously from one side of a double sided disc to the other. You will need to eject the disc and turn it over.
When using 8 cm (3’’) DVD-RAM, remove the disc from the cartridge.
# Operations during play

**Stop**

Press [■].

The stopped position is memorized.

"PLAY" flashes in the unit's display. (Excluding when playing from the Direct Navigator and when playing a play list.)

Press [■] (PLAY) to return to normal speed.

**Resume play function**

Press [■] (PLAY) to restart from this position.

**Pause**

Press [II].

Press again to restart play.

**Search**

Press [◄◄] or [►►].

- On the main unit, press [◄◄] or [ ►►].
- The speed increases up to 5 steps.
- Press [►►] (PLAY) to restart play.
- Audio is heard during first level search forward.
- You can turn off the sound during search ( page 41, "Search Audio & PLAY x 1.3").
- Audio is heard during all levels of search. [DVD-A] (excluding moving picture parts) [CD]

**Skip**

Press [◄◄] or [►►].

- On the main unit, press [◄◄]'s or [ ►►].
- Each press increases the number of skips.

**Starting from a selected item**

<table>
<thead>
<tr>
<th>HDD</th>
<th>RAM</th>
<th>DVD</th>
<th>DVD-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:</td>
<td>[0]</td>
<td>[5]</td>
<td>[0]</td>
</tr>
<tr>
<td>15:</td>
<td>[1]</td>
<td>[5]</td>
<td>[0]</td>
</tr>
</tbody>
</table>

[CD] (MP3 discs only)

5: [0] 15: [1]

**Quick View**

Press and hold [►►] (PLAY x 1.3).

- Press again to return to normal speed.
- This does not work if the setting is "Off" in "Search Audio & PLAY x 1.3" ( page 41).

**Slow-motion**

While paused, press [◄◄] or [ ►►].

- On the main unit, press [◄◄] or [ ►►].
- The speed increases up to 5 steps.
- Press [►►] (PLAY) to restart play.
- Forward direction only. [DVD]
- The unit will pause if slow-motion play is continued for 5 minutes.

**Frame-by-frame**

While paused, press [◄◄] or [ ►►].

- Each press shows the next frame.
- Press [►►] (PLAY) to restart play.
- Forward direction only. [DVD]

**Displaying the television image as a picture-in-picture**

Press [TIME SLIP].

The unit displays the television image as a picture-in-picture.
- You will hear the playback audio.
- Press [TIME SLIP] again to cancel.
- The blue background does not appear on the receiving screen even if you select "On" from the "Blue Background" in the SETUP menu ( page 42).

1 Press [TIME SLIP].
2 Press [◄, ▼] to select the time and press [ENTER].

Play the specified time.
- Press [TIME SLIP] to show the play images in full.

**Skipping the specified time (Time Slip)**

Press [TIME SLIP].

Press [CM SKIP].
Playing discs

Refer to the control reference on page 24.

Editing operations during play

**Erase**

1. Press [ERASE].
   - A title cannot be restored once it is erased. Make certain before proceeding.
   - You cannot erase while recording or transferring (dubbing).

**Create chapters**

Press [CHAPTER].
   - Press [◄◄, ► ►] to skip to the start of a chapter.
   - You cannot divide while recording or transferring (dubbing).

Changing audio during play

Press [AUDIO].

1. Press [AUDIO].

   - When playing an SAP broadcast recorded on DVD-RAM:
     **MAIN** ➔ **SAP**

   - e.g., “L R” is selected

   - You can change the audio channel number each time you press the button. This allows you to change things like the soundtrack language (➡ page 28, Soundtrack).
   - You cannot change the audio type in the following cases.
     - When a DVD-R disc is in the disc tray while DVD drive is selected.
     - When the recording mode is XP and “Audio for XP Recording” is set to “LPCM” (➡ page 42).
     - When “DVD-R High-Speed Recording” is set to “On” (➡ page 41).

   - You cannot divide while recording or transferring (dubbing).

   - e.g., English is selected.
Using menus to play MP3

This unit plays MP3 files recorded on CD-R/RW designed for audio recording that are finalized (page 46) on a computer. Files are treated as tracks and folders are treated as groups.

1 Press [TOP MENU].

2 Press [ ] to select the track and press [ENTER].

Play continues to the last track in the last group.

You can also select the track with the numbered buttons.

Search by numbered button:

- 001 Both Ends Freezing
- 002 Lady Starfish
- 003 Life on Jupiter
- 004 Metal Glue
- 005 Paint It Yellow
- 006 Pyjamamama
- 007 Shrimps from Mars
- 008 Starperson
- 009 Velvet Cuppermine
- 010 Ziggy Starfish

To show other pages
Press [ ] to select “Prev.” or “Next” and press [ENTER]. After listing all the tracks in one group, the list for the next group appears.

To exit the screen
Press [TOP MENU].

Tips for making MP3 discs

- Discs must conform to ISO9660 level 1 or 2 (except for extended formats).
- Compatible compression rate: between 32 kbps and 320 kbps
- Compatible sampling rate: 16 kHz, 22.05 kHz, 24 kHz, 32 kHz, 44.1 kHz and 48 kHz
- Maximum number of tracks and groups recognizable: 999 tracks and 99 groups
- This unit is compatible with multi-session.
- This unit is not compatible with ID3 tags or packet writing.
- Depending on recording, some items may not be playable.
- Reading or play of the disc may take time if there are a lot of still pictures or sessions.
- The display order may differ from how the order is displayed on a computer.

Naming folders and files

- MP3 files must have the extension "MP3" or "mp3".
- At the time of recording, give folder and file names a 3-digit numeric prefix in the order you want them to play (this may not work at times).
- English alphabets and Arabic numerals are displayed correctly. Other characters may not be displayed correctly.
Using on-screen menus and Status messages

Disc menu—Setting the disc content

Sound track

- HDD RAM DVD-VR
- DVD VCD
- Select the audio and language (below, Audio attribute, Language).

Subtitle

- HDD RAM DVD-VR
- DVD VCD
- Turn the subtitle on/off and select the language (below, Language).
- Subtitle on/off information cannot be recorded using this unit.
- If the subtitles overlap closed captions recorded on discs, turn the subtitles off.

Audio channel

- HDD RAM VCR
- page 26, Changing audio during play

Angle

- DVD-A DVD-V
- STILL-P (Still picture) DVD-V
- Selects the play method for still pictures.
- Slide Show: Plays according to the default order on the disc.
- Page: Select the still picture number and play.
- RANDOM: Plays in random order.
- Return: Returns to the default still picture on the disc.

PBC (Playback control page 46) VCD

Indicates whether menu play (playback control) is on or off.

You may have to use the menus (page 24) on the disc to make changes.

The display changes according to the disc content. You cannot change when there is no recording.

Audio attribute

- LPCM/PPCM/Digital/DTS/MPEG: Signal type
- k (kHz): Sampling frequency
- b (bit): Number of bits
- ch (channel): Number of channels

Language

- ENG: English
- FRA: French
- DEU: German
- ITA: Italian
- ESP: Spanish
- NLD: Dutch
- SVE: Swedish
- NOR: Norwegian
- DAN: Danish
- POR: Portuguese
- VIE: Vietnamese
- JPN: Japanese
- +: Others

On-screen menus

1 Press [DISPLAY].

<table>
<thead>
<tr>
<th>Menu</th>
<th>Item</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disc</td>
<td>Sound track</td>
<td>1</td>
</tr>
<tr>
<td>Play</td>
<td>Status</td>
<td>DDR</td>
</tr>
<tr>
<td>Video</td>
<td>Audio channel</td>
<td>L:R</td>
</tr>
</tbody>
</table>

- Depending on the condition of the unit (playing, stopped, etc.) and disc contents, there are some items that you cannot select or change.

2 Press [▲, ▼] to select the menu and press [▶].

3 Press [▲, ▼] to select the item and press [▶].

4 Press [▲, ▼] to select the setting.
- Some items can be changed by pressing [ENTER].

To clear the on-screen menus
Press [DISPLAY].
Playing back

This function works only when the elapsed play time is displayed.

### Repeat play
- **All**: HM CD (excluding MP3 discs)
- **Chapter**: HM DVI CD
- **Group**: HM DVI DVI
- **Title**: HM DVI DVI
- **Track**: HM DVI DVI

Select “OFF” to cancel.

### Video menu–Change the picture quality

#### Picture
- **Normal**: Default setting
- **Soft**: Soft picture with fewer video artifacts
- **Fine**: Details are sharper
- **Cinema**: Mellow movies, enhances detail in dark scenes
- **User**: You can make further adjustments.

#### Contrast
Increases the contrast between light and dark parts of the picture.

#### Brightness
Brightens the picture.

#### Sharpness
Adjust the sharpness of the edges of the horizontal lines.

#### Color
Adjusts the shade of the picture’s color.

#### 3D NR
Reduces overall noise.

#### Integrated DNR
Reduces mosaic noise and character smudging.

#### MPEG-DNR (When any item other than “User” is selected)
You can turn the recommended settings for 3D NR and Integrated DNR on and off.

#### Progressive* ([page 46])
- Select “ON” to enable progressive output.
- Select “OFF” if the picture is stretched horizontally.
- When progressive output is on, closed captions cannot be displayed.

#### Transfer (When “Progressive” ([above]) is set to “ON”)
Select the method of conversion for progressive output to suit the type of material being played ([page 46], Film and video).

- **Auto1 (normal)**:
  - Detects 24 frame-per-second film content and appropriately converts it.
- **Auto2**:
  - Compatible with 30 frame-per-second film content in addition to 24 frame-per-second film content. (Picture distortion may occur depending on the content)
- **Video**:
  - Select when using “Auto1” and “Auto2”, and the video content is distorted.

* Only when you have selected “480P” in “TV Type” ([page 12]).

---

### Audio menu–Change the sound effect

#### V.S.S.
- **HDD**: RAM DVD
- **DVD**: RAM DVD

(Only with Dolby Digital with 2 or more channels)

Enjoy a surround-like effect if you are using two front speakers only.
- **Turn V.S.S. off if it causes distortion.**
- **V.S.S. does not work for SAP recordings.**

#### Dialog Enhancer
- **DVD**: HDD

(Dolby Digital, 3-channel or over only, including a center channel)

The volume of the center channel is raised to make dialog easier to hear.

---

### Status messages

Status messages appear on the television during operation to show the condition of the unit.

Press [STATUS].

The display changes each time you press the button.

- **Displayed information are examples.**

### Recording drive/Transfer (dubbing) progress indicator

#### Date and time

#### Title number and elapsed time during recording

#### Available recording time and recording mode

#### No display

---

### Audio types

- **HDD**: RAM DVD
- **DVD**: RAM DVD

### Recording mode

- **No display**

---

* Only when you have selected “480P” in “TV Type” ([page 12]).
Editing titles/chapters

Preparation
- Press [HDD] or [DVD] to select the drive.
- Release protection (cartridge page 14, disc page 39).

1 Press [DIRECT NAVIGATOR].

2 Press [ ], , , ] to select the title.

To show other pages
Press [ ], , , ] to select “Previous” or “Next” and press [ENTER].
You can also press [ ], , , ] to show other pages.
Multiple editing
Select with [ ], , , ] and press [ ] (Repeat.)
A check mark appears. Press [ ] again to cancel.

3 Press [SUB MENU], then [ ], ] to select the operation and press [ENTER].
- If you select “Edit”, press [ ], ] to select the operation and press [ENTER].

4 Press [ ], , , ] to select the chapter.
To start play Press [ENTER].
To edit Step 5.

5 Press [SUB MENU], then [ ], ] to select the operation and press [ENTER].
- If you select “Erase”, press [ ], ] to select the operation and press [ENTER].

To exit the screen
Press [DIRECT NAVIGATOR].
To return to the previous screen
Press [RETURN].

Editing titles/chapters and playing chapters

Title/Chapter
Programs are recorded as a single title consisting of one chapter.

<table>
<thead>
<tr>
<th>Title</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>End</td>
</tr>
</tbody>
</table>

You can divide a title into multiple chapters.

<table>
<thead>
<tr>
<th>HDD</th>
<th>RAM</th>
<th>DVD-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titles: 500</td>
<td>Chapters: Approximately 1000 per title</td>
<td>(Depends on the state of recording.)</td>
</tr>
<tr>
<td>Titles: 99</td>
<td>Chapters: Approximately 1000</td>
<td>(Depends on the state of recording.)</td>
</tr>
</tbody>
</table>

Note
- Once erased, divided or shortened, it cannot be restored to its original state. Make certain before proceeding.
- You cannot edit during recording, chasing play or transferring (dubbing), etc.
- Restricted recording information remains even after editing (e.g. dividing a title, etc.).
**Title operations**

**Erase**
- Press [◁, ▷] to select “Erase” and press [ENTER].
  - The available recording time on DVD-R does not increase when you erase titles.

**Properties**
- Information (e.g., time and date) is shown.

**Enter Name**
- ➡ page 34, Entering text

**Set up Protection**
- If set, this will protect the title from accidental erasure.

**Cancel Protection**
- Press [◁, ▷] to select “Yes” and press [ENTER].
  - The lock symbol appears when the title is protected.

**Shorten**
- You can remove unnecessary parts of the recording such as commercials.
  1. Press [ENTER] at the start point and end point of the section you want to erase.
  2. Press [▲, ▼] to select “Exit” and press [ENTER].

**Change Thumbnail**
- You can change the image to be shown as the thumbnail picture in the Title View.
  1. Press [▷] (PLAY) to start play.
  2. Press [ENTER] when the image you want to use as a thumbnail is shown.

**Divide Title**
- You can divide a title into two.
  1. Press [ENTER] at the point you want to divide the title.
  2. Press [▲, ▼] to select “Exit” and press [ENTER].

- To confirm the division point
  - Press [▲, ▼] to select “Preview” and press [ENTER]. (The unit plays 10 seconds before and after the division point.)
  - To change the division point
  - Restart play and press [▲, ▼] to select “Divide”, then press [ENTER] at the point you want to change.

  - **Note**
  - The divided titles retain the name and CPRM property (➡ page 46) of the original title.
  - Video and audio just before and after the dividing point may momentarily cut out.

*Multiple editing is possible.

**Chapter operations**

**Erase Chapter**
- Press [◁, ▷] to select “Erase” and press [ENTER].

**Divide Chapter**
- Press [ENTER] at the point you want to divide.
  - Repeat this step to divide at other points.
- Press [▲, ▼] to select “Exit” and press [ENTER].

**Combine Chapters**
- Press [◁, ▷] to select “Combine” and press [ENTER].
  - The selected chapter and next chapter are combined.

*Multiple editing is possible.

For quicker editing
- Use search, Time Slip or slow-motion (➡ page 25) to find the desired point.
- Press [◁◁, ▷▷] to skip to the end of a title.
Creating, editing and playing play lists

2 Press [▲, ▼, ◀, ▶] to select “PLAY LIST” and press [ENTER].

3 Press [▲, ▼, ◀, ▶] to select “Create” and press [ENTER].

4 Press ◀, ▶ to select the source title and press ▼.
   • Press [ENTER] to select all the chapters in the title, then skip to step 6.

5 Press ◀, ▶ to select the chapter you want to add to a play list and press [ENTER].
   • You can also create a new chapter from the source title. Press [SUB MENU] to select “Divide Chapter” and press [ENTER] (page 31, Divide Chapter).

6 Press ◀, ▶ to select the position to insert the chapter and press [ENTER].
   • Repeat steps 5–6 to add other chapters.
   • Press [▲] to select other source titles.

7 Press [RETURN].

To exit the screen
Press [RETURN] several times.

To return to the previous screen
Press [RETURN].
Editing and playing play lists/chapters

1 Press [FUNCTIONS].

2 Press [△, ▽, ←, →] to select “PLAY LIST” and press [ENTER].

3 Press [△, ▽, ←, →] to select the play list.

To start play ➡ Press [ENTER].
To edit ➡ Step 4.

4 Press [SUB MENU], then [△, ▽] to select the operation and press [ENTER].
To show other pages/Multiple editing ➡ page 30

If you select “Edit”, press [△, ▽] to select the operation and press [ENTER].

To show other pages/Multiple editing ➡ page 30

5 Press [△, ▽, ←, →] to select the chapter.

To start play ➡ Press [ENTER].
To edit ➡ Step 6.

6 Press [SUB MENU], then [△, ▽] to select the operation and press [ENTER].

To show other pages/Multiple editing ➡ page 30

7 Press [SUB MENU], then [△, ▽] to select the operation and press [ENTER].

≥ Multiple editing is possible.

Play list operations

Erase
Press [◄, ►] to select “Erase” and press [ENTER].

Properties
Play list information (e.g., time and date) is shown.

Create ➡ page 32, Creating play lists

Copy
Press [◄, ►] to select “Copy” and press [ENTER].

Enter Name ➡ page 34, Entering text

Change Thumbnail ➡ page 31, Change Thumbnail

≥ Multiple editing is possible.

Chapter operations

Editing chapters in a play list does not modify the source titles and source chapters.

Add Chapter ➡ page 32, Creating play lists, Step 4–6

Move Chapter
Press [△, ▽, ←, →] to select the position to insert the chapter and press [ENTER].

Divide Chapter ➡ page 31, Divide Chapter

Combine Chapters ➡ page 31, Combine Chapters

Erase Chapter
≥ page 31, Erase Chapter

≥ Multiple editing is possible.

To exit the screen
Press [RETURN] several times.

To return to the previous screen
Press [RETURN].
### Entering text

You can give names to recorded titles, etc.

The maximum number of characters:

**HDD/TAPE/DVD-R**

<table>
<thead>
<tr>
<th></th>
<th>Characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>64</td>
</tr>
<tr>
<td>Play list</td>
<td>64</td>
</tr>
<tr>
<td>Disc</td>
<td>40</td>
</tr>
</tbody>
</table>

**DVD-R**

<table>
<thead>
<tr>
<th></th>
<th>Characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>44</td>
</tr>
<tr>
<td>Disc</td>
<td>40</td>
</tr>
</tbody>
</table>

If a name is long, parts of it may not be shown in some screens.

#### 1 Show Enter Name screen.

- **Title**
  - Select “Enter Name” in step 3 on page 30.
- **Play list**
  - Select “Enter Name” in step 4 on page 33.
- **Disc**
  - Select “Disc Name” in step 3 on page 38.

**Name field:** shows the text you have entered

#### 2 Press [▲, ▼, ◀, ►] to select a character and press [ENTER].

Repeat this step to enter other characters.

- **To erase a character**
  - Press [▲, ▼, ◀, ►] to select the character in the name field and press [●].

- **Using the numbered buttons to enter characters**
  - e.g., entering the letter “R”
    3. Press [ENTER].

- **To enter a space**
  - Press [● CANCEL] and press [ENTER].

#### 3 Press [● CANCEL] (SET).

Returns to the previously displayed screen.

**To end partway**

Press [RETURN].

Text is not saved.

**Note**

If you enter a long name, only part of it is shown in the TOP MENU after finalization (page 39). When entering a title name, the name that will appear in the TOP MENU can be previewed in "Display in DVD-R TOP MENU" window.
Transferring (dubbing) titles or play lists

You can select from a variety of methods to transfer (dub) on this unit.

Transferring (dubbing) direction

You can transfer (dub) your favorite titles and play lists to an archive disc. Transferring (dubbing) a play list will create a title.

When you want to re-edit finalized content on a DVD-R, etc.

HDD RAM DVD-R

High speed mode

Normal speed mode

RAM HDD

High speed mode

When you want to play a transferred (dubbed) disc on other equipment, you must finalize the disc after transferring (dubbing) (page 39, 46).

Before recording to HDD, set "DVD-R High-Speed Recording" to "On" (page 41).

Normal speed mode: Select XP, SP, LP, EP or FR as the recording mode for transferring (dubbing) (page 17).

Transferring (dubbing) mode

Transferring (dubbing) speed mode types and features

Features

You can transfer (dub) in a very short amount of time. You can transfer (dub) even faster if you use a high speed recording compatible disc.

You can record and play using the HDD while high speed transferring (dubbing).

Features

You can record for a long period of time on 1 disc. For example, using LP mode, you can record approximately 4 hours on 1 (4.7 GB) disc (page 17).

e.g., 1 hour TV drama

Only one episode using XP mode

4 episodes using LP mode

Transferring (dubbing) times

Approx. 20 min.

The same amount of time it takes to record the source

Picture quality

Original picture quality

Can change*

Are chapters/thumbnails maintained?

Yes

No (One title is recorded as one chapter. Thumbnails return to the default position.)

Other operations while transferring (dubbing)

You can record/play using the HDD.

No

* If you select a recording mode with better picture quality than the original, the picture quality does not improve. (However, it does prevent against degradation of picture quality.)

Approximate transferring (dubbing) times (Max. speed)

<table>
<thead>
<tr>
<th>HDD</th>
<th>3x high speed recording compatible DVD-RAM</th>
<th>4x high speed recording compatible DVD-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>XP</td>
<td>1 hour</td>
<td>Approx. 20 min.</td>
</tr>
<tr>
<td>SP</td>
<td>2 hours</td>
<td>3x</td>
</tr>
<tr>
<td>LP</td>
<td>4 hours</td>
<td>6x</td>
</tr>
<tr>
<td>EP (6H)</td>
<td>6 hours</td>
<td>12x</td>
</tr>
<tr>
<td>EP (8H)</td>
<td>8 hours</td>
<td>18x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24x</td>
</tr>
</tbody>
</table>

Note

- When recording or playing while transferring (dubbing), the unit may not use the maximum recording speed.
- Depending on the condition of the disc, the unit may not transfer (dub) using the maximum speed.

Regarding high speed transfer (dubbing) to DVD-R

To high speed transfer (dub) titles (or play lists created from those titles), set “DVD-R High-Speed Recording” to “On” before recording to the HDD (page 41).

However, in the following cases, transferring (dubbing) to DVD-R using the high speed mode does not work.

- Play lists created from titles using a variety of recording modes
- Play lists created from multiple titles using FR recording mode
- Play lists mixed with a variety of audio types (Dolby Digital and LPCM, etc.)
- Titles that contain many erased segments.

Regarding transferring (dubbing) of digital broadcasts that allow “One time only recording”

You can transfer (dub) a recorded title to a CPRM (page 46) compatible DVD-RAM; however, the title is erased from the HDD.

- You cannot use one touch transfer (dubbing). Use the transferring (dubbing) list (page 36).
- You will not be transferred if they are protected (page 31).
- You cannot transfer play lists created from “One time only recording” titles.
- Titles with recording limitations and play lists cannot be registered on the same transferring (dubbing) list.

You can transfer (dub) your favorite titles and play lists to an archive disc.

Transferring (dubbing) a title or a play list

Transferring (dubbing) multiple titles and play lists together

One Touch Transfer (dubbing) (page 36)

Transferring (dubbing) using the transferring (dubbing) list (page 36)

You can select transferring (dubbing) speed mode and picture quality (below)

High speed

Normal speed (XP, SP, LP, EP, FR)

Features

You can transfer (dub) in a very short amount of time. You can transfer (dub) even faster if you use a high speed recording compatible disc.

You can record and play using the HDD while high speed transferring (dubbing).

Features

You can record for a long period of time on 1 disc. For example, using LP mode, you can record approximately 4 hours on 1 (4.7 GB) disc (page 17).

e.g., 1 hour TV drama

Only one episode using XP mode

4 episodes using LP mode

Transferring (dubbing) times

Approx. 20 min.

The same amount of time it takes to record the source

Picture quality

Original picture quality

Can change*

Are chapters/thumbnails maintained?

Yes

No (One title is recorded as one chapter. Thumbnails return to the default position.)

Other operations while transferring (dubbing)

You can record/play using the HDD.

No

* If you select a recording mode with better picture quality than the original, the picture quality does not improve. (However, it does prevent against degradation of picture quality.)

Approximate transferring (dubbing) times (Max. speed)

<table>
<thead>
<tr>
<th>HDD</th>
<th>3x high speed recording compatible DVD-RAM</th>
<th>4x high speed recording compatible DVD-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>XP</td>
<td>1 hour</td>
<td>Approx. 20 min.</td>
</tr>
<tr>
<td>SP</td>
<td>2 hours</td>
<td>3x</td>
</tr>
<tr>
<td>LP</td>
<td>4 hours</td>
<td>6x</td>
</tr>
<tr>
<td>EP (6H)</td>
<td>6 hours</td>
<td>12x</td>
</tr>
<tr>
<td>EP (8H)</td>
<td>8 hours</td>
<td>18x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24x</td>
</tr>
</tbody>
</table>

Note

- When recording or playing while transferring (dubbing), the unit may not use the maximum recording speed.
- Depending on the condition of the disc, the unit may not transfer (dub) using the maximum speed.

Regarding high speed transfer (dubbing) to DVD-R

To high speed transfer (dub) titles (or play lists created from those titles), set “DVD-R High-Speed Recording” to “On” before recording to the HDD (page 41).

However, in the following cases, transferring (dubbing) to DVD-R using the high speed mode does not work.

- Play lists created from titles using a variety of recording modes
- Play lists created from multiple titles using FR recording mode
- Play lists mixed with a variety of audio types (Dolby Digital and LPCM, etc.)
- Titles that contain many erased segments.

Regarding transferring (dubbing) of digital broadcasts that allow “One time only recording”

You can transfer (dub) a recorded title to a CPRM (page 46) compatible DVD-RAM; however, the title is erased from the HDD.

- You cannot use one touch transfer (dubbing). Use the transferring (dubbing) list (page 36).
- You will not be transferred if they are protected (page 31).
- You cannot transfer play lists created from “One time only recording” titles.
- Titles with recording limitations and play lists cannot be registered on the same transferring (dubbing) list.

You can transfer (dub) your favorite titles and play lists to an archive disc.

Transferring (dubbing) a title or a play list

Transferring (dubbing) multiple titles and play lists together

One Touch Transfer (dubbing) (page 36)

Transferring (dubbing) using the transferring (dubbing) list (page 36)

You can select transferring (dubbing) speed mode and picture quality (below)
Transferring (dubbing) titles or play lists

**One Touch Transfer (dubbing)**

1. **Play the title or play list you want to transfer (dub).**
2. **Press [DUBBING].**
3. **Press [◀, ▶] to select “Yes” and press [ENTER].**
   - The recording mode is set as follows. The recording mode changes to FR mode if the remaining disc space is exceeded using one of the recording modes indicated below.

<table>
<thead>
<tr>
<th>HDD</th>
<th>RAM</th>
<th>DVD-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>High speed mode</td>
<td>Same recording mode used as when recording the source title (XP–EP, FR). Play lists are transferred (dubbed) in FR mode.</td>
<td></td>
</tr>
</tbody>
</table>

**Preparation**

Select the audio type for recording bilingual broadcast from “Select MTS” (page 42) when transferring (dubbing) to a DVD-R.

- When “Audio for XP Recording” is set to “LPCM” (page 42) and you are transferring (dubbing) in XP mode.

- You can order titles and play lists for transfer (dubbing) as desired as well as select the speed and picture quality.

**Transferring (dubbing) using the transferring (dubbing) list**

1. **While stopped**
   - Press [FUNCTIONS].
2. **Press [▲, ▼, ◀, ▶] to select “DUBBING” and press [ENTER].**
3. **Press [▲, ▼] to select “Dubbing direction” and press [▶].**
   - Press [ENTER].
   - Press [▲, ▼] to select “Mode” and press [▶].
   - Press [◄] to confirm.
4. **Press [▲, ▼] to select “Mode” and press [▶].**
   - Press [◄] to confirm.
5. **Select the transferring (dubbing) items and register on the list.**
   - If you are not going to change the registered list press [ENTER] (step 7).
   - Repeat steps 3 to 5 as necessary.
   - To erase, add, or move items from the list (page 37)
   - To show other pages/Multiple editing (page 37)
6. **Press [▲, ▼] to select “SET” and press [ENTER].**
   - The transferring (dubbing) list is registered.
7 Press [▲, ▼] to select “Start dubbing” and press [ENTER].
Press [◄, ►] to select “Yes” and press [ENTER] to start transferring (dubbing).

Transferring (dubbing) list icons

- Titles and play lists that can be transferred (dubbed) in high speed mode to DVD-R
- Title with “One time only recording” restriction
- Titles erased from the HDD by recording restrictions after transferring (dubbing).
- Title or play list contains still picture(s)
  - Still picture(s) cannot be transferred (dubbed).

“Dubbing list”
Data size recorded to the transfer (dubbing) destination
- For normal speed transfer (dubbing), the data size changes according to the recording mode.
- For high speed transfer (dubbing), this is the total “Capacity”. (When transferring (dubbing) to the HDD, the management information is included so the data size is actually larger than this total.)

- To edit the transferring (dubbing) list
Select the item in step 5 (page 36, right column)
- Press [SUB MENU].
- Press [▲, ▼] to select the operation and press [ENTER].
  * Multiple editing is possible (below).

- To cancel all registered transferring (dubbing) setting and lists
In step 3 (page 36, right column)
- Press [◄, ►] to select “Cancel all” and press [ENTER].
  * Transferring (dubbing) lists are also cancelled in the following cases:
  - The source title or play list is erased.
  - The tray is opened or the unit is turned off when the transferring (dubbing) source is DVD-RAM.

To show other pages
Press [▲, ▼, ◄, ►] to select “Previous” or “Next” and press [ENTER].
- You can also press [◄, ►, ◄, ►] to show other pages.

Multiple editing
Select with [▲, ▼, ◄, ►] and press []. (Repeat.)
Press [ENTER] to register to the list.
- A check mark appears. Press [.] again to cancel.
- When you switch between the “Title” and “Play List” tab, the check mark is cancelled.

Transferring (dubbing) a finalized DVD-R

- While playing a disc, the content being played is transferred (dubbed) to the HDD according to the set time.
- Operations and on screen displays during transfer (dubbing) are also recorded.

To stop transferring (dubbing)
Press and hold [RETURN] for 3 seconds.
- If stopped partway, transferring (dubbing) will be up to that point.
  * However, in high speed mode, only titles that have completed transferring (dubbing) at the point stopped are transferred (dubbed).
  * Even if the title was not transferred (dubbed) to the DVD-R, the amount of remaining writable disc space becomes less.

To return to the previous screen
Press [RETURN].

- Almost all DVD-Video on sale have been treated to prevent illegal copying, and cannot be transferred (dubbed).
- The following cannot be transferred (dubbed): DVD-Audio, Video CD, Audio CD and so on.

5 Press [▲, ▼] to select “Time to end” and press [►].

6 Press [◄, ►] to select “Hour” and “Min.” and press [▲, ▼] to set the recording time.

7 Press [◄] to select “Time to end” and press [▼].

8 Press [▲, ▼] to select “Start dubbing” and press [ENTER].
Press [◄, ►] to select “Yes” and press [ENTER] to start transferring (dubbing).

The disc top menu is displayed.
- Disc play automatically begins from title 1 when “Title 1” is selected from the “Select First play” menu when finalizing the disc (page 39).

9 When the top menu is displayed
Press [▲, ▼, ◄, ►] to select the title you want to start transferring (dubbing), and press [ENTER].

While playing in order, all the titles after the selected title are recorded until the set time. (After the last title on the disc has finished playing the top menu is recorded until the set time is reached.)

To end transfer (dubbing) manually
Press [◄]:

- The screen on the right (screen saver) is recorded at the beginning.
- Recorded as 1 title from the start of transfer (dubbing) to the end.
- If play does not begin automatically or if the top menu does not display automatically, press [►] (PLAY) to start.
- Even if you transfer (dub) a high quality video/audio DVD, the original picture and audio quality cannot be exactly replicated.

Recording and playing while transferring (dubbing)
You can record and play using the HDD while high speed transferring (dubbing).
Press [ENTER] to cancel the screen display.

To confirm the current progress
Press [STATUS].

- You cannot perform chasing play or edit, etc. while transferring (dubbing).
- Timer recordings executed while transferring (dubbing) are recorded to the HDD regardless of the recording drive settings.
- You cannot play a play list while transferring (dubbing) titles with “One time only recording” restriction (page 35).
By using the FUNCTIONS window you may access the main functions quickly and easily.

1 While stopped
Press [FUNCTIONS].

Functions displayed depend on the type of disc.

2 Press [▲, ▼, ◀, ▶] to select an item and press [ENTER].

To exit the FUNCTIONS window
Press [FUNCTIONS].
Convenient functions

Disc Name

Page 34, Entering text

The disc name is displayed in the FUNCTIONS window.

Disc Protection

If set, this will protect the disc from accidental erasure.

Press [◄, ►] to set disc protection and press [ENTER].

The lock symbol appears closed when the disc is write-protected.

Format disc/Format

Erase the entire contents on the HDD.

Some DVD-RAM are unformatted. Format them before using them in this unit. Formatting also allows you to erase the entire contents of a disc.

1. Press [◄, ►] to select “Yes” and press [ENTER].
2. Press [◄, ►] to select “Start” and press [ENTER].

A message appears when formatting is finished.

3. Press [ENTER].

To stop formatting
Press [RETURN].

You can cancel formatting if it takes more than 2 minutes. The disc must be reformatted if you do this.

Do not disconnect the AC power supply cord while the message “Formatting...” is on the television. This can render the disc unusable.

Formatting normally takes a few minutes; however, it may take up to a maximum of 70 minutes.

Formatting cannot be performed on DVD-R or CD-R/RW.

TOP MENU

Prior to finalizing, you can select the background that will be displayed as the DVD-Video top menu after finalizing.

You can change thumbnails displayed in the Top menu. (page 31, Change Thumbnail)

Press [▲, ▼, ◀, ▶] to select the background and press [ENTER].

Select First play

Select whether to show the top menu after finalizing the disc. Do this before finalizing the disc.

Press [▲, ▼] to select “Top Menu” or “Title 1” and press [ENTER].

Title 1: The top menu appears first.

Finalize

You can play DVD-R on compatible DVD players by finalizing them on this unit, effectively making them into DVD-Video that complies with DVD-Video standards.

Set “TOP MENU” and “Select First play” (above) before finalizing the disc.

1. Press [◄, ►] to select “Yes” and press [ENTER].
2. Press [◄, ►] to select “Start” and press [ENTER].

A message appears when finalizing is finished.

3. Press [ENTER].

Do not disconnect the AC power supply cord while the message “Finalizing the disc” is on the television. This will render the disc unusable.

Finalizing takes up to 15 minutes.

You cannot finalize DVD-R recorded on other manufacturer's equipment.

If you finalize a recorded DVD-R on Panasonic equipment other than this unit, the background selected as “TOP MENU” may not display.

DVD-R finalized on this unit may not be playable on other players due to the condition of the recording.

Visit Panasonic’s homepage for more information about DVDs.

For Canada: www.panasonic.ca
Changing the unit’s settings

**Convenient functions**

1. **Changing the unit’s settings**

   **While stopped**
   - Press [SETUP].
   - Press [3, 4] to select the tab and press [1].
   - Press [3, 4] to select the menu and press [ENTER].
   - Press [3, 4] to select the option and press [ENTER].

   **To exit the screen**
   - Press [SETUP].

   **To return to the previous screen**
   - Press [RETURN].

   The settings remain intact even if you switch the unit to standby.

   * You need to set these menus only when you do not use TV Guide On Screen system. These menus turn gray and become un-selectable after this unit downloads the television program list.

   * You can set these menus only after “Auto Channel Setting” is completed.

**Summary of settings**

The settings remain intact even if you switch the unit to standby.

1. **You need to set these menus only when you do not use TV Guide On Screen system. These menus turn gray and become un-selectable after this unit downloads the television program list.**

2. **You can set these menus only after “Auto Channel Setting” is completed.**

<table>
<thead>
<tr>
<th>Tabs</th>
<th>Menus</th>
<th>Options (Underlined items are the factory presets.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Channel</strong></td>
<td><strong>TV</strong></td>
<td><strong>CATV</strong></td>
</tr>
<tr>
<td>Antenna System</td>
<td>Select to suit the type of antenna you are using.</td>
<td></td>
</tr>
<tr>
<td>Auto Channel Setting</td>
<td>(page 43)</td>
<td></td>
</tr>
<tr>
<td>Preset Channel Captions</td>
<td>(page 44)</td>
<td></td>
</tr>
<tr>
<td>Manual Channel Captions</td>
<td>(page 44)</td>
<td></td>
</tr>
<tr>
<td><strong>Set Up</strong></td>
<td><strong>Off Timer</strong></td>
<td><strong>2 hr</strong> <strong>6 hr</strong> <strong>Off</strong></td>
</tr>
<tr>
<td>Select how long the unit remains on when it is not being used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote Control Code</td>
<td>(page 13)</td>
<td></td>
</tr>
<tr>
<td>Auto Clock Setting</td>
<td>(page 43)</td>
<td></td>
</tr>
<tr>
<td>Manual Clock Setting</td>
<td>(page 11)</td>
<td></td>
</tr>
<tr>
<td>Time Zone Adjust</td>
<td>(page 43)</td>
<td></td>
</tr>
<tr>
<td>Re-initialize Settings</td>
<td></td>
<td><strong>Yes</strong> <strong>No</strong></td>
</tr>
<tr>
<td>This returns all values in the SETUP menus, except for the clock, channel settings, ratings level, and on-screen language, to the default settings.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disc Languages</th>
<th>Choose the language for audio, subtitle and disc menus.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter a code (page 46) with the numbered buttons when you select “Other XXX”. When the selected language is not available on the disc, the default language is played. There are discs where you can only switch the language from the menu screen (page 24).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Audio Language</th>
<th>English</th>
<th>French</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original: The original language of each disc will be selected. Other XXX</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subtitle Language</th>
<th>Automatic: If the language selected for “Audio Language” is not available, subtitles of that language will automatically appear if available on that disc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>French</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Menu Language</th>
<th>English</th>
<th>French</th>
<th>Spanish</th>
<th>Other XXX</th>
</tr>
</thead>
</table>

Continued on next page
**Disc**

**Continued on next page**

**Tabs**

**Menus**

**Options (Underlined items are the factory presets.)**

### Disc

**Ratings**
Set a ratings level to limit DVD-Video play.

- **8 No Limit:** All DVD-Video can be played.
- **1 to 7:** Prohibits play of DVD-Video with corresponding ratings recorded on them.
- **0 Lock All:** Prohibits play of all DVD-Video.

**Recording Time in EP Mode**
Select the maximum number of hours for recording in EP mode (page 17, Recording modes and approximate recording times).

- **EP (6H):** You can record for 6 hours on an unused 4.7 GB disc.
- **EP (8H):** You can record for 8 hours on an unused 4.7 GB disc.

**Play DVD-Audio in Video Mode**
Select "Video (On)" to play DVD-Video content on some DVD-Audio.

- **Video (On):** The setting returns to "Audio (Off)" when you change the disc or turn the unit off.
- **Audio (Off):**

**DVD-R High-Speed Recording**
When high speed transferring (dubbing) a title to DVD-R, it is necessary to turn this setting "On" before recording to HDD; however, the screen size, etc. is restricted (right). We recommend turning the setting "Off" when recording to media other than DVD-R. You cannot transfer titles to a DVD-R using the high speed mode if you recorded the program on a DVD-recorder that does not have the "DVD-R High-Speed Recording" function, even when transferring (dubbing) to the HDD with this setting "On".

- **On:** Makes high speed mode transferring (dubbing) to DVD-R possible. Press [ ] to select "Yes" and press [ENTER]. [ ] appears in the transferring (dubbing) list. (page 36)
  - Pictures are saved at 4:3.
  - Hybrid VBR Resolution ([below] setting is "Fixed".)
  - For SAP broadcasts use "Select MTS" ([page 42). Select the type of audio in advance.
- **Off:**

### Video

**3-D Y/C Separation**

- **On:** Reduces noise by separating the luminance (Y) and color (C) signals when recording.
- **Off:** Reduces the ghosting that occurs when recording fast moving images.

**Hybrid VBR Resolution** ([page 46, VBR)

- **Automatic:** The resolution is automated to provide efficient recording with less block noise. [page 25]
- **Fixed:** The resolution is fixed to ensure that there is no loss of source picture resolution while recording.

**Still Mode**
Select the type of picture shown when you pause play ([page 46, Frames and fields).]

- **Automatic:**
- **Field:** Select if jittering occurs when "Automatic" is selected.
- **Frame:** Select if small text or fine patterns cannot be seen clearly when "Automatic" is selected.

**Seamless Play**
Select the play mode for play list chapter segments.

- **On:** The chapters in play lists are played seamlessly. This does not work when there are several audio types included on the play list and when using Quick View. Additionally, the positioning of chapter segments may change slightly.
- **Off:** The points where chapters in play lists change are played accurately, but the picture may freeze for a moment.

**Line-in NR**
Reduces video tape noise while transferring (dubbing).

- **Automatic:** Noise reduction only works on picture input from a video tape.
- **On:** Noise reduction works for any video input.
- **Off:** Noise reduction is off. Select when you want to record input as is.

**Black Level Control**
Select normal, lighter or darker for adjusting the black level control to the desired setting for picture enhancement.

**Input Level**
Adjusts the black level of the input signal.

- **Lighter**
- **Darker**

**Output Level (Composite/S Video)**
Adjusts the black level of the output signal from the VIDEO OUT and S-VIDEO OUT terminal.

- **Lighter**
- **Darker**

**Output Level (Component)**
Adjusts the black level of the output signal from the COMPONENT VIDEO OUT (YPbPr) terminals.

- **Lighter**
- **Normal**
- **Darker**

### Audio

**Search Audio & PLAY = 1.3**
You may hear sound regardless of this setting with some discs.

- **On:** Audio is heard during first level search forward.
- **Off:** Audio is not heard during search. Quick View ([page 25) does not work.

**D. Range Compression** ([Dolby Digital only)
Change the dynamic range for late night viewing.

- **On**
- **Off**

Continued on next page
## Changing the unit's settings

<table>
<thead>
<tr>
<th>Tabs</th>
<th>Menus</th>
<th>Options (Underlined items are the factory presets.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Audio</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continued</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select MTS</td>
<td></td>
<td>●Main ●SAP</td>
</tr>
<tr>
<td>Select the audio recording type, main or secondary (SAP) audio when:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–Recording or transferring (dubbing) to a DVD-R.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–Recording or transferring (dubbing) sound in LPCM. (→ below, Audio for XP Recording)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You cannot select this when recording from an external source onto DVD-R. Select audio on the other equipment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Digital Audio Output</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change the settings when you have connected equipment through this unit's DIGITAL AUDIO OUT terminal (→ page 9).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●On: Signals are converted to 48 kHz or 44.1 kHz. (Choose when the connected equipment cannot process signals with sampling frequency of 96 kHz or 88.2 kHz.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●Off: Signals are output as 96 kHz or 88.2 kHz. (Choose when the connected equipment can process signals with sampling frequency of 96 kHz or 88.2 kHz.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PCM Down Conversion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select how to output audio with a sampling frequency of 96 kHz or 88.2 kHz.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●Signals are converted to 48 kHz or 44.1 kHz despite the above settings if the signals have a sampling frequency of over 96 kHz or 88.2 kHz, or the disc has copy protection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dolby Digital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select how to output the signal, to output &quot;Bitstream&quot; so the connected equipment decodes the signal, or to decode on this unit and output the signal as &quot;PCM&quot; (2 channel).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●Bitstream: When connecting to equipment displaying the Dolby Digital logo.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●PCM: When connecting to equipment not displaying the Dolby Digital logo.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Audio for XP Recording</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choose the audio type when recording or transferring (dubbing) with XP mode.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●Dolby Digital (→ page 46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●LPCM (→ page 46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–The picture quality of LPCM recordings may be lower than that of normal XP mode recordings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–The audio recording becomes Dolby Digital even if you selected LPCM when using a recording mode other than XP.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–When recording MTS broadcast, select the type of audio in advance from &quot;Select MTS&quot; (→ above)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status Messages</td>
<td></td>
<td>●Automatic ●Off</td>
</tr>
<tr>
<td>Choose whether to show status messages automatically.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>On-screen Language</strong></td>
<td></td>
<td>●English ●Español ●Français</td>
</tr>
<tr>
<td>Choose the language for these menus and on-screen messages.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>–Only English is displayed in the TV Guide On Screen system regardless of the settings. Other languages cannot be displayed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blue Background</strong></td>
<td></td>
<td>●On ●Off</td>
</tr>
<tr>
<td>Select &quot;Off&quot; if you do not want to have the unit show the blue background when reception is weak.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Front Display</strong></td>
<td></td>
<td>●Bright ●Dim</td>
</tr>
<tr>
<td>Changes the brightness of the unit's display.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●Automatic:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The display turns dark during play, and reappears momentarily if a button is pressed. When the unit is turned off all displays disappear. While using this mode the standby power consumption can be reduced.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TV Screen</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TV Type</strong> (→ page 12)</td>
<td></td>
<td>●Aspect 4:3 &amp; 480i ●Aspect 4:3 &amp; 480P</td>
</tr>
<tr>
<td>4:3 TV Settings for DVD-Video Select how DVD-Video widescreen picture is shown on a 4:3 standard aspect television.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●Pan &amp; Scan: Video recorded for a widescreen is played as Pan &amp; Scan (unless prohibited by the producer of the disc).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●Letterbox: Video recorded for a widescreen is played in the letterbox style.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:3 TV Settings for DVD-RAM Select how DVD-RAM widescreen picture is shown on a 4:3 standard aspect television.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●4:3: Titles played as recorded.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●Pan &amp; Scan: Video recorded for a widescreen is played as Pan &amp; Scan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>●Letterbox: Video recorded for a widescreen is played in the letterbox style.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Channel/Clock settings when TV Guide On Screen system is not used

Refer to the control reference on page 40.

Preparation:
If the television program list has already been downloaded, return the unit to the factory preset condition using the steps indicated below.

When the unit is on and stopped
1. Press and hold [CH] and [CH] on the main unit for about five seconds.
   The unit turns off.
2. Press [DVD POWER] to turn the unit on.
3. Complete the TV Guide On Screen system setup (until [ENTER] is pressed after the “Watch TV” message screen is displayed).

**Note**
You can set timer recording only manually after you set the unit with “Auto Channel Setting”.

### Auto channel/clock settings

1. Press [SETUP].
2. Press [ ], [ ] to select “Channel” and press [ ].
3. Press [ ], [ ] to select “Auto Channel Setting” and press [ENTER].
4. Press [ ], [ ] to select “Yes” and press [ENTER].
5. Press [ENTER].

Auto Channel Setting starts. This takes a few minutes. The unit then proceeds with Auto Clock Setting. The time is displayed when finished.

- **DST**, Daylight Saving Time, shows the summertime setting.
- **TIME ZONE** shows the time difference from Greenwich mean time (GMT).
  - EST (Eastern Standard Time) = GMT – 5
  - CST (Central Standard Time) = GMT – 6
  - MST (Mountain Standard Time) = GMT – 7
  - PST (Pacific Standard Time) = GMT – 8
  - AST (Alaska Standard Time) = GMT – 9
  - HST (Hawaii Standard Time) = GMT – 10
  - For other areas: xx hr

- If the Auto Clock Setting does not start automatically, select “Auto Channel Setting” from the “Set Up” tab.
- If the time was not set correctly, use manual clock setting (page 11) or time zone adjust.
6. Press [ENTER].

**Time Zone Adjust**
Adjust the time zone (–1 or +1) if it was not set correctly with Auto clock setting.
You cannot change this setting if you set the clock manually.

1. Press [SETUP].
2. Press [ ], [ ] to select “Set Up” and press [ ].
3. Press [ ], [ ] to select “Time Zone Adjust” and press [ENTER].
4. Press [ ], [ ] to select “–1” or “+1” and press [ENTER].

To exit the screen
Press [SETUP].

To return to the previous screen
Press [RETURN].
Convenient functions

Channel captions

You can use the preset captions, or manually enter new ones yourself. The captions you enter are displayed when the channel is displayed and in the Direct Navigator screen.

- You can set channel captions only after “Auto Channel Setting” is completed.

1 Press [SETUP].

2 Press [▲, ▼] to select “Channel” and press [▶].

3 Press [▲, ▼] to select “Preset Channel Captions” and press [ENTER].

4 Press [▲, ▼] to select the caption and press [▶].

- You can choose from the following captions:
  ABC, PBS, CBS, CNN, FOX, ESPN, NBC, HBO, A&E, AMC, FAM, MAX, MTV, SHOW, TBS, USA, TNT, CBC, UPN, CTV, WB, TSN, DSC, GLOB

- When selecting the caption, press and hold [▲, ▼] to scroll up and down the screen.

5 Press [▲, ▼] to select the channel corresponding to the caption and press [▶].

- Channels are only displayed if they contain a station and if preset captions have not been added.

6 Press [▲, ▼] to return to the “Channel Number” column.

Repeat steps 4–6 to enter other channels.

7 Press [ENTER].

To exit the screen
Press [SETUP].

To return to the previous screen
Press [RETURN].
Specifications

Recording system: DVD Video Recording format (DVD-RAM) DVD-Video format (DVD-R)
Recordable discs:
DVD-RAM:
12 cm (5”) 4.7 GB, 12 cm (5”) 9.4 GB, 8 cm (3”) 2.8 GB
12 cm (5”) 4.7 GB (Ver. 2.1/3×-SPEED DVD-RAM Revision 1.0)
DVD-R:
12 cm (5”) 4.7 GB, 8cm (3”) 1.4 GB (for General Ver. 2.0)
12 cm (5”) 4.7 GB (for General Ver. 2.0/4×-SPEED DVD-R
Revision 1.0)
Recording time:
• Maximum 8 hours (with 4.7 GB disc)
  XP: Approx. 1 hour SP: Approx. 2 hours
  LP: Approx. 4 hours EP: Approx. 6 hours/8 hours
• Maximum 213 hours (with built-in 120 GB HDD)
  XP: Approx. 26 hours SP: Approx. 52 hours
  LP: Approx. 104 hours EP: Approx. 160 hours/213 hours
Playable discs:
DVD-RAM:
12 cm (5”) 4.7 GB, 12 cm (5”) 9.4 GB, 8 cm (3”) 2.8 GB
12 cm (5”) 4.7 GB (Ver. 2.1/3×-SPEED DVD-RAM Revision 1.0)
DVD-R:
12 cm (5”) 4.7 GB, 8cm (3”) 1.4 GB (for General Ver. 2.0)
12 cm (5”) 4.7 GB (for General Ver. 2.0/4×-SPEED DVD-R
Revision 1.0)
Built-in HDD Capacity: 120 GB
Drive unit: High Speed Drive (correspond to 4 times speed with
DVD-R disc and 3 times speed with DVD-RAM disc)

LASER Specification
Class I LASER Product
Wave length: 795 nm 658 nm
Laser power: No hazardous radiation is emitted with the safety protection

Audio system
Recording system: Dolby Digital 2 ch, Linear PCM (XP mode, 2ch)
Input:
LINE (pin jack) x 3
Reference input: 209 mVrms
FS: 2 Vrms (1 kHz, 0 dB)
Input Impedance: 47 kΩ
Output:
LINE (pin jack) x 2 (Load impedance: 10 kΩ)
Reference output: 209 mVrms
FS: 2 Vrms (1 kHz, 0 dB)
Output Impedance: 1 kΩ
Digital Audio Out: Optical terminal (PCM, Dolby Digital, DTS)

Television system
Tuner system: NTSC-M
Antenna reception input: TV Channel: 2ch–69ch, 75 Ω
CATV Channel: 1ch–125ch, 75 Ω
RF Converter Output: Not provided

Video system
TV system:
NTSC color signal, 525 lines, 60 fields
Recording system: MPEG2 (Hybrid VBR)
Input:
LINE (pin jack) x 3 Y: 1.0 Vp-p; C: 0.286 Vp-p; 75 Ω
S connector x 3 Y: 1.0 Vp-p; C: 0.286 Vp-p; 75 Ω
Component video output (480P/480i):
Y: 1.0 Vp-p; 75 Ω
Pb: 0.7 Vp-p; 75 Ω
Pr: 0.7 Vp-p; 75 Ω

Others
Regional code: # 1
Clock unit: Quartz-controlled 12-hour digital display
Operating temperature range: 5 °C–40 °C (41 °F–104 °F)
Operating humidity range: 10%–80% RH (no condensation)
Power supply: AC 120 V, 60 Hz
Power consumption: 35 W
Dimensions: Approx. 430 (W) x 120 (H) x 31/8 (D) mm
[Approx.16 ⅜”(W) x 4¾”(H) x 10”(D)] (excluding protrusions)
Mass: Approx. 4.2 kg (9.24 lbs)

Maintenance

The precision parts in this unit are readily affected by the environment, especially temperature, humidity, and dust. Cigarette smoke also can cause malfunction or breakdown.

To clean this unit, wipe with a soft, dry cloth.
Never use alcohol, paint thinner or benzine to clean this unit.
Before using chemically treated cloth, read the instructions that came with the cloth carefully.

Observe the following points to ensure continued listening and viewing pleasure.
Dust and dirt may adhere to the unit’s lens over time, making it impossible to record or play discs.
Use the DVD-RAM/PD lens cleaner (LF-K123LCA1, where available) about once every year, depending on frequency of use and the operating environment. Read the lens cleaner’s instructions carefully before use.

User memo:

DATE OF PURCHASE ______________________________
DEALER NAME _________________________________
DEALER ADDRESS ______________________________
TELEPHONE NUMBER ______________________________

The model number and serial number of this product can be found on either the back or the bottom of the unit. Please note them in the space provided below and keep for future reference.
MODEL NUMBER DMR-E85H
SERIAL NUMBER

Power consumption in standby mode: approx. 15 W

Note
Specifications are subject to change without notice. Mass and dimensions are approximate.
Being 24 frames per second.

Formatting erases irrevocably all recordings on the disc.

Recordable on recording equipment.

Formatting is the process of making media such as DVD-RAM DVD-R on this unit possible on equipment that can play such media. You can finalize.

Finalize

Film is 24 or 30 frames per second, with motion picture film generally method of progressive output.

DTS (Digital Theater Systems)

This sound and system is used in many movie theaters. There is good separation between the channels, so realistic sound effects are possible.

Dynamic range

Dynamic range is the difference between the loudest and softest sounds. Dynamic range is the difference between the lowest level of sound before distortion occurs. Dynamic range compression means reducing the gap between the loudest and softest sounds.

This means you can listen at low volumes but still hear dialog clearly.

Film and video

DVD-Video are recorded using either film or video. This unit can determine which type has been used, then uses the most suitable method.

Film is 24 or 30 frames per second, with motion picture film generally being 24 frames per second.

Video is 60 fields per second (two fields making up one frame).

Finalize

A process that makes play of a recorded CD-R, CD-RW, DVD-R, etc. possible on equipment that can play such media. You can finalize DVD-R on this unit.

Using progressive output, you can enjoy the high-resolution video recorded on media such as DVD-Video. Your television must be compatible to enjoy progressive video.

Letterbox

Black bands appear at the top and bottom of the picture so the picture itself appears in an aspect ratio of 16:9.

Letterbox: Black bands appear at the top and bottom of the picture so the picture itself appears in an aspect ratio of 16:9.

Pan & Scan: The sides are cut off so the picture fills the screen.

Pan & Scan/Letterbox

In general, DVD-Video are produced with the intention that they be viewed on a widescreen television (16:9 aspect ratio), so images often don’t fit regular (4:3 aspect ratio) televisions. Two styles of picture, “Pan & Scan” and “Letterbox”, deal with this problem.

Pan & Scan: The sides are cut off so the picture fills the screen.

Letterbox: Black bands appear at the top and bottom of the picture so the picture itself appears in an aspect ratio of 16:9.

Playback control (PBC)

If a Video CD has playback control, you can select scenes and information with menus. (This unit is compatible with version 2.0 and 1.1.)

Progressive/Interlace

NTSC, the video signal standard, has 480 interlaced (I) scan lines, whereas progressive scanning uses twice the number of scan lines. This is called 480P.

Using progressive output, you can enjoy the high-resolution video recorded on media such as DVD-Video. Your television must be compatible to enjoy progressive video.

Protection

You can prevent accidental erasure by setting writing protection or writing of large amounts of data at high speed.

LCD (Liquid Crystal Display)

A display that provides high-resolution images using LCD method of video recording that adjusts the bit rate according to video signal.

VBR (Variable bitrate)

This is a method of video recording that adjusts the bit rate according to video signal.
# Frequently asked questions

## Set up

<table>
<thead>
<tr>
<th>Question</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>What equipment is necessary to play multi channel surround sound?</td>
<td>9</td>
</tr>
<tr>
<td>You can play DVD-Video multi channel surround by digitally connecting an amplifier equipped with a Dolby Digital and a DTS decoder.</td>
<td></td>
</tr>
<tr>
<td>DVD-Audio: This unit plays DVD-Audio in 2 channels. You cannot play multi channel surround sound.</td>
<td></td>
</tr>
<tr>
<td>Are the headphones and speakers directly connected to the unit?</td>
<td>9</td>
</tr>
<tr>
<td>You cannot directly connect to the unit. Connect through the amplifier, etc.</td>
<td></td>
</tr>
<tr>
<td>The television has both S-VIDEO IN terminal and COMPONENT VIDEO IN terminals. Which terminal should I connect with?</td>
<td>7</td>
</tr>
<tr>
<td>We recommend the COMPONENT VIDEO IN terminal. Component signal outputs the color difference signals (PB/PR) and luminance signal (Y) separately in order to achieve high fidelity in reproducing colors. If the television is compatible with progressive output, a high quality picture can be output because this unit’s component video output terminal outputs a progressive output signal.</td>
<td></td>
</tr>
<tr>
<td>Is my television progressive output compatible?</td>
<td>—</td>
</tr>
<tr>
<td>All Panasonic televisions that have 480P input terminals are compatible.</td>
<td></td>
</tr>
<tr>
<td>Consult the manufacturer if you have another brand of television.</td>
<td></td>
</tr>
</tbody>
</table>

## Disc

<table>
<thead>
<tr>
<th>Question</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can I play DVD-Video, DVD-Audio and Video CDs bought in another country?</td>
<td>—</td>
</tr>
<tr>
<td>You can play them if the video standard is NTSC.</td>
<td></td>
</tr>
<tr>
<td>However, you cannot play DVD-Video if their region number does not include “1” or “All”.</td>
<td></td>
</tr>
<tr>
<td>Can a DVD-Video that does not have a region number be played?</td>
<td>—</td>
</tr>
<tr>
<td>The DVD-Video region number indicates the disc conforms to a standard.</td>
<td></td>
</tr>
<tr>
<td>You cannot play discs that do not have a region number.</td>
<td></td>
</tr>
<tr>
<td>Please tell me about DVD-R and DVD-RW compatibility with this unit.</td>
<td>—</td>
</tr>
<tr>
<td>This unit records and plays DVD-R. However, you cannot record onto DVD-R discs that are finalized.</td>
<td></td>
</tr>
<tr>
<td>This unit also records and plays high speed recording compatible discs.</td>
<td></td>
</tr>
<tr>
<td>This unit does not record or play DVD-RW.</td>
<td></td>
</tr>
<tr>
<td>Please tell me about CD-R and CD-RW compatibility with this unit.</td>
<td>14, 27</td>
</tr>
<tr>
<td>You can play CD-R and CD-RW on this unit that are created using a compatible format.</td>
<td></td>
</tr>
<tr>
<td>You cannot write to a CD-R or CD-RW with this unit.</td>
<td></td>
</tr>
</tbody>
</table>

## Recording

<table>
<thead>
<tr>
<th>Question</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can I record from a commercially purchased video cassette or DVD?</td>
<td>—</td>
</tr>
<tr>
<td>Most commercially sold video cassettes and DVD are copy protected; therefore, recording is usually not possible.</td>
<td></td>
</tr>
<tr>
<td>Can a DVD-R recorded on this unit be played on other equipment?</td>
<td>39</td>
</tr>
<tr>
<td>You can play on DVD-R compatible players after finalizing the disc on this unit; however, due to the condition of the recording, play may not be possible.</td>
<td></td>
</tr>
<tr>
<td>How many times can I write to a DVD-RAM disc?</td>
<td>—</td>
</tr>
<tr>
<td>You can write to the disc approximately 100,000 times depending upon the conditions of use.</td>
<td></td>
</tr>
<tr>
<td>Can I high speed transfer (dub) to a disc?</td>
<td>35</td>
</tr>
<tr>
<td>You can record up to 32× recording speed to DVD-R and up to 24× recording speed to DVD-RAM when using a high speed compatible disc.</td>
<td></td>
</tr>
<tr>
<td>Can I record digital audio signals using this unit?</td>
<td>—</td>
</tr>
<tr>
<td>You cannot record digital signals. The digital audio terminals on this unit are for output only.</td>
<td></td>
</tr>
<tr>
<td>Can a digital audio signal from this unit be recorded to other equipment?</td>
<td>42</td>
</tr>
<tr>
<td>You can record if using the PCM signal. When recording DVD, change the “Digital Audio Output” settings to the following from the SETUP menu.</td>
<td></td>
</tr>
<tr>
<td>–PCM Down Conversion On Pcm DTS Digital Pcm</td>
<td></td>
</tr>
<tr>
<td>–DTS Pcm</td>
<td></td>
</tr>
<tr>
<td>However, only As long as digital recording from the disc is permitted.</td>
<td></td>
</tr>
<tr>
<td>As long as the recording equipment is compatible with a sampling frequency of 48 kHz.</td>
<td></td>
</tr>
<tr>
<td>You cannot record MP3 signals.</td>
<td></td>
</tr>
<tr>
<td>Can I switch to MTS during recording?</td>
<td>17</td>
</tr>
<tr>
<td>With HDD and DVD-RAM, you can, and the audio recorded also changes.</td>
<td></td>
</tr>
<tr>
<td>Just press [AUDIO].</td>
<td></td>
</tr>
<tr>
<td>With DVD-R, you cannot. Change before recording with “Select MTS” in the SETUP menu.</td>
<td></td>
</tr>
</tbody>
</table>

## TV Guide On Screen system

<table>
<thead>
<tr>
<th>Question</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not want TV Guide On Screen system to automatically appear on screen.</td>
<td>23</td>
</tr>
<tr>
<td>Select “Off” in “Review options” menu, so that TV Guide On Screen system appears only when you press [TV GUIDE].</td>
<td></td>
</tr>
<tr>
<td>I do not want to use TV Guide On Screen system.</td>
<td>43</td>
</tr>
<tr>
<td>Set the unit with “Auto Channel Setting”. Note that you can set timer recording only manually after you set the unit with “Auto Channel Setting”.</td>
<td></td>
</tr>
</tbody>
</table>
## Error messages

### On the television

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannot finish recording completely.</td>
<td>—</td>
</tr>
<tr>
<td>Cannot play.</td>
<td>—</td>
</tr>
<tr>
<td>Cannot record on the disc.</td>
<td>15</td>
</tr>
<tr>
<td>Unable to format.</td>
<td>—</td>
</tr>
<tr>
<td>Cannot record. Disc is full.</td>
<td>26, 31, 39</td>
</tr>
<tr>
<td>Error has occurred. Please press ENTER.</td>
<td>—</td>
</tr>
<tr>
<td>No disc</td>
<td>—</td>
</tr>
<tr>
<td>This is a non-recordable disc.</td>
<td>—</td>
</tr>
<tr>
<td>This disc is not formatted properly.</td>
<td>39</td>
</tr>
</tbody>
</table>

### On the unit's display

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHK REMOTE</td>
<td>The remote control and main unit are using different codes. Change the code on the remote control. Press and hold [ENTER] and the indicated number button at the same time for more than 2 seconds.</td>
</tr>
<tr>
<td>HARD ERR</td>
<td>If there is no change after turning the unit on and off, consult the dealer where the unit was purchased.</td>
</tr>
<tr>
<td>HDD SLP</td>
<td>In order to extend HDD life, the HDD is in SLEEP mode. Press [HDD] to activate.</td>
</tr>
<tr>
<td>NO READ</td>
<td>The disc is dirty or badly scratched. The unit cannot record, play, or edit. You have used a DVD-RAM/PD lens cleaner and it has finished. Press [OPEN/CLOSE] on the main unit to eject the disc.</td>
</tr>
<tr>
<td>PLEASE WAIT</td>
<td>Displayed when the unit is started. This is not a malfunction.</td>
</tr>
<tr>
<td>SELF CHECK</td>
<td>There was a power failure or the AC plug was disconnected while the unit was on. The unit is carrying out its recovery process. Wait until the message disappears.</td>
</tr>
<tr>
<td>UNSUPPORT</td>
<td>You have inserted a disc the unit cannot play or record on.</td>
</tr>
<tr>
<td>U14</td>
<td>The unit is hot. The unit switches to standby for safety reasons. Wait for about 30 minutes until the message disappears. Select a position with good ventilation when installing the unit. Do not block the cooling fan on the rear of the unit.</td>
</tr>
<tr>
<td>U99</td>
<td>The unit fails to operate properly. Press [POWER 0/1] on the main unit to switch the unit to standby. Now press [POWER 0/1] on the main unit again to turn the unit on.</td>
</tr>
</tbody>
</table>

## Product Service

1. **Damage requiring service** — The unit should be serviced by qualified service personnel if:
   - (a) The AC power supply cord or AC adaptor has been damaged; or
   - (b) Objects or liquids have gotten into the unit; or
   - (c) The unit has been exposed to rain; or
   - (d) The unit does not operate normally or exhibits a marked change in performance; or
   - (e) The unit has been dropped or the cabinet damaged.

2. **Servicing** — Do not attempt to service the unit beyond that described in these operating instructions. Refer all other servicing to authorized servicing personnel.

3. **Replacement parts** — When parts need replacing ensure the servicer uses parts specified by the manufacturer or parts that have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock, or other hazards.

4. **Safety check** — After repairs or service, ask the servicer to perform safety checks to confirm that the unit is in proper working condition.

## Product Information

For product information or assistance with product operation:

In the U.S.A., refer to "Customer Services Directory" on page 52.
In Canada, contact the Panasonic Canada Inc. Customer Care Centre at 1-800-561-5505, or visit the website (www.panasonic.ca), or an authorized Servicentre closest to you.
Troubleshooting guide

Before requesting service, make the following checks. If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the “Customer Services Directory” on page 52 if you reside in the U.S.A., or refer to the “Product information” on page 48 if you reside in Canada.

The following do not indicate a problem with this unit:

- Regular disc rotating sounds. The sound of disc rotating may become louder especially when finalizing a DVD-R.
- Poor reception due to atmospheric conditions.
- Image disturbance during search.
- Intermittent picture momentarily appears.
- Screen size is wrong.

Power

No power.
- Insert the AC power supply cord securely into a known active AC outlet.

The unit switches to standby mode.
- This is a power saving feature. Change “Off Timer” in the SETUP menu, if you would prefer.
- One of the unit’s safety devices is activated. Press [POWER \(\oplus\)] on the main unit to turn the unit on.

Displays

The display is dim.
- Change “Front Display” in the SETUP menu.
- Set the clock.

“12:00” is flashing on the unit’s display.
- The displayed recording/play time is converted from the number of frames at 29.97 frames (equal to 0.999 seconds) to one second. There will be a slight difference between the time displayed and the actual elapsed time (e.g., actual one-hour elapsed time may display as approximately 59 minutes 56 seconds). This does not affect the recording.

Compared to the actual recorded time, the remaining time displayed is less.
- Times shown may disagree with actual times.
- More disc space than the actual recording time is used after recording or editing the DVD-R 200 times or more.
- While searching, the elapsed time may not display correctly.
- Even if you erase recorded content from the DVD-R, there is no increase in disc space.

The time recorded on the disc and the available time shown do not add up.

The play time shown for MP3 does not agree with the actual time.

Television screen and video

Television reception worsens after connecting the unit.
- This can occur because the signals are being divided between the unit and other equipment. It can be solved by using a signal booster, available from audio-visual suppliers.

Status messages do not appear.
- Select “Automatic” in “Status Messages” in the SETUP menu.

The blue background does not appear.
- Select “On” in “Blue Background” in the SETUP menu.

The 4:3 aspect ratio picture expands left and right.
- Use the television to change the aspect. If your television does not have that function, set “Progressive” in the Video menu to “OFF”.
- Check the settings for “TV Type”, “4:3 TV Settings for DVD-Video” or “4:3 TV Settings for DVD-RAM” in the SETUP menu.

Screen size is wrong.
- Set “Progressive” in the Video menu to “OFF”. This problem is caused by the editing method or material used on DVD-Video, but should be corrected if you use interface output.
- Change the settings for “3D NR” and “Integrated DNR” to “0” or turn “MPEG-DNR” off if it is on.

There is a lot of after-image when playing video.
- Change the settings for “3D NR” and “Integrated DNR” to “0” or turn “MPEG-DNR” off if it is on.
- Set “Progressive” in the Video menu to “OFF”. This problem is caused by the editing method or material used on DVD-Video, but should be corrected if you use interface output.

When playing DVD-Video using progressive output, one part of the picture momentarily appears to be doubled up.

There is no apparent change in picture quality when adjusted with the Video menu in the on-screen menus.
- The effect is less perceivable with some types of video.

The images from this unit do not appear on the television.
- Make sure that the television is connected to the VIDEO OUT terminal, S-VIDEO OUT terminal or COMPONENT VIDEO OUT terminals on this unit.
- Make sure that the television’s input setting (e.g., VIDEO 1) is correct.
- The television isn’t compatible with progressive signals. Press and hold [\(\Box\)] and [TIME SLIP] on the main unit at the same time for about 5 seconds. The setting will change to interlace.

Picture is distorted.

Sound

No sound.
- Check the connections and settings. Check the input mode on the amplifier if you have connected one.
- Press [AUDIO] to select the audio.
- Turn off V.S.S. in the following cases.
  - When using discs that do not have surround sound effects such as Karaoke discs.
  - When playing MTS broadcast programs.
- The disc may have a restriction on the method of audio output. If “D.MIX” does not appear in the display when playing multi-channel DVD-Audio, only audio for the two front channels will be output. Refer to the disc’s jacket.
- You cannot switch audio in the following cases.
  - When a DVD-R disc is in the disc tray while DVD drive is selected.
  - When the recording mode is XP and “Audio for XP Recording” is set to “LPCM”.
  - When “DVD-R High-Speed Recording” is set to “On”.
- You have used digital connection. Set “Dolby Digital” to “PCM” or connect using audio cables (analog connection).
- There are discs for which audio cannot be changed because of how the disc was created.

Low volume.
- Distorted sound.
- Cannot hear the desired audio type.

Cannot switch audio.
## Troubleshooting guide

### Operation

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<td>Cannot operate the television. The remote control doesn’t work.</td>
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| 1. Change manufacturer code. Some televisions cannot be operated even if you change the code.  
2. The remote control and main unit are using different codes. Change the code on the remote control.  
Press and hold [ENTER] and the indicated number button at the same time for more than 2 seconds. | 4 |
| 1. The batteries are depleted. Replace them with new ones.  
2. Colored glass may obstruct the signal reception/transmission.  
3. Do not place the signal sensor in direct sunlight or in areas that may be subject to sunlight exposure. | — |
| The unit is on but cannot be operated. | 16, 24 |
| 1. Recording drive or playback drive has not been selected properly.  
2. Some operations may be prohibited by the disc.  
3. The unit is hot (“U14” appears on the display). Wait for “U14” to disappear.  
4. One of the unit’s safety devices may have been activated. Reset the unit as follows:  
Press [POWER ON/OFF] on the main unit to switch the unit to standby.  
If the unit doesn’t switch to standby, press and hold [POWER ON/OFF] on the main unit for about 10 seconds. The unit is forcibly switched to standby.  
Alternatively, disconnect the AC power supply cord, wait one minute, then reconnect it. | — |
| HDD activation is slow. | 15 |
| 1. The HDD is in SLEEP mode. (“HDD SLP” appears in the unit’s display.) | — |
| Cannot eject disc. | — |
| 1. The unit may have a problem. While the unit is off, press and hold [■] and [CH + / -] on the main unit at the same time for about 5 seconds. Remove the disc and consult the dealer. | — |
| Cannot record. | 14 |
| 1. You haven’t inserted a disc or the disc you inserted cannot be recorded on. Insert a disc the unit can record onto.  
2. The disc is unformatted. Format the disc ([RAM] or [HDD]).  
3. The write-protect tab on the cartridge is set to PROTECT, or the disc is protected with DISC PROTECTION.  
4. Some programs have limitations on the number of times they can be recorded. (CPRM)  
5. You cannot record when there is not enough space or when the number of titles has reached its limit. Erase unwanted titles.  
6. You cannot record on finalized DVD-R discs.  
7. Due to peculiarities of DVD-R, you may be unable to record onto them if you either insert and remove the disc or switch the unit on and off while a disc is loaded, a total of fifty times.  
8. A DVD-R recorded on this unit may not be recordable on other Panasonic DVD recorders. | 14, 39 |
| Timer recording does not work properly. | 22 |
| 1. The timer program is incorrect or different timer program times overlap. Correct the program.  
2. Timer recording program may be deleted if there is an interruption to the power.  
3. VCR Plus+ system works only after this unit downloads the television program list. | — |
| Timer recording does not stop even when [■] is pressed. | 19, 20, 21 |
| 1. Press [■] and then [ENTER] within 5 seconds. Recording stops. | — |
| The timer program remains even after recording finishes. | 19, 20 |
| 1. The timer program remains unless set to “Once”. | — |
| A part or whole of a recorded title has been lost. | 39 |
| 1. If there is a power failure or the plug is disconnected from the household AC outlet while recording or editing, the title may be lost or the HDD/disc may become unusable. You will have to format the disc ([RAM] or [HDD]) or use a new disc. We cannot offer any guarantee regarding lost titles or discs. | — |
| Cannot transfer (dub) to a DVD-R disc using the high speed mode. | 41 |
| 1. When recording to the HDD, set “DVD-R High-Speed Recording” to “On” in the SETUP menu. | — |
| When transferring (dubbing), it takes a long time even when high speed mode is selected. | — |
| 1. Use a disc that is compatible with high speed recording. Even if the disc is high speed recording compatible, the maximum speed recording rating may not be possible due to the condition of the disc.  
2. It takes longer than normal to transfer (dub) many titles.  
3. You cannot high speed transfer (dub) to DVD-R titles longer than 6 hours when using other Panasonic DVD recorders that are not compatible with EP (8 hour) mode recording. | — |
| An unusually loud sound coming from the rotating DVD-R. | — |
| 1. When recording or high speed transferring (dubbing) to a DVD-R, the sound of the disc rotating may be louder than normal; however, this is not a problem. | — |
### TV Guide On Screen system

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<td>7, 8, 10</td>
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<td>&quot;Cable code -INCOMPLETE,-&quot; appears in the TV Guide On Screen system setup.</td>
<td>—</td>
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<tr>
<td>As soon as the unit is turned on, and when you try to start timer recording, the TV Guide On Screen system setup begins.</td>
<td>10</td>
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<td>Several days of television program listings are blank.</td>
<td>—</td>
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<td>Channel changes even when no operation is performed.</td>
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### Play

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<td>No subtitles.</td>
<td>—</td>
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<td>Angle cannot be changed.</td>
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<td>You have forgotten your ratings password.</td>
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<td>Quick View does not work.</td>
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<td>The resume play function does not work.</td>
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### Edit

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<td>Cannot create chapters.</td>
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<td>Cannot erase chapters.</td>
<td>—</td>
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<tr>
<td>The available recording time doesn’t increase even after erasing recordings on the disc.</td>
<td>—</td>
</tr>
<tr>
<td>Cannot create a play list.</td>
<td>—</td>
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Limited Warranty (ONLY FOR U.S.A.)

Panasonic Consumer Electronics Company,
Division of Matsushita Electric Corporation of America
One Panasonic Way Secaucus, New Jersey 07094

Panasonic Sales Company, Division of Matsushita Electric
of Puerto Rico, Inc.,
Ave. 65 de Infantería, Km. 9.5
San Gabriel Industrial Park, Carolina, Puerto Rico 00985

Panasonic DVD Recorder
Limited Warranty

Limited Warranty Coverage
If your product does not work properly because of a defect in materials or workmanship, Panasonic Consumer Electronics Company or Panasonic Sales Company (collectively referred to as "the warrantor") will, for the length of the period indicated on the chart below, which starts with the date of original purchase ("warranty period"), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new or a refurbished product. The decision to repair or replace will be made by the warrantor.

During the "Labor" warranty period there will be no charge for labor. During the "Parts" warranty period, there will be no charge for parts. You must carry-in or mail-in your product during the warranty period. If non-rechargeable batteries are included, they are not warranted. This warranty only applies to products purchased and serviced in the United States or Puerto Rico. This warranty is extended only to the original purchaser of a new product, and is not transferable. A purchase receipt or other proof of original purchase date is required for warranty service.

Limited Warranty Limits And Exclusions
This warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which result from improper repair, misapplication, abuse, neglect, a misuse, accident, lightning, power line surge, alteration, modification, improper installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line voltage fluctuations, commercial use (such as in a hotel, office, restaurant, or other business), rental use of the product, service by anyone other than a Factory Servicenter or other Authorized Servicer, or damage that is attributable to acts of God.

THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER "LIMITED WARRANTY COVERAGE". THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. (As examples, this excludes damages for lost time, travel to and from the servicenter, loss of media or images, data or other recorded content. The items listed are not exclusive, but are for illustration only.) ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE PERIOD OF THE LIMITED WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the exclusions may not apply to you.

This warranty gives you specific legal rights and you may also have other rights, which vary from state to state. If a problem with this product develops during or after the warranty period, you may contact your dealer or Servicenter. If the problem is not handled to your satisfaction, then write to the warrantor's Consumer Affairs Department at the addresses listed for the warrantor.

PARTS AND SERVICE WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY ARE YOUR RESPONSIBILITY.

Customer Services Directory

Obtain Product Information and Operating Assistance; locate your nearest Dealer or Servicenter; purchase Parts and Accessories; or make Customer Service and Literature requests by visiting our Web Site at:

http://www.panasonic.com/support

or, contact us via the web at:

http://www.panasonic.com/contactinfo

You may also contact us directly at:

1-800-211-PANA (7262),
Monday-Friday 9 am-9 pm; Saturday-Sunday 10 am-7 pm, EST.

For hearing or speech impaired TTY users, TTY: 1-877-833-8855

Accessory Purchases

Purchase Parts, Accessories and Instruction Books online for all Panasonic Products by visiting our Web Site at:

http://www.pasc.panasonic.com

or, send your request by E-mail to:

npcparts@panasonic.com

You may also contact us directly at:

1-800-332-5368 (Phone) 1-800-237-9080 (Fax Only) (Monday – Friday 9 am to 8 pm, EST.)

Panasonic Consumer Electronics Company,
20421 84th Avenue South, Kent, WA 98032
(We Accept Visa, MasterCard, Discover Card, American Express, and Personal Checks)

For hearing or speech impaired TTY users, TTY: 1-866-605-1277

Service in Puerto Rico

Matsushita Electric of Puerto Rico, Inc., Panasonic Sales Company
Factory Servicenter:
Ave. 65 de Infantería, Km. 9.5, San Gabriel Industrial Park, Carolina, Puerto Rico 00985
Phone (787)750-4300, Fax (787)768-2910

One Panasonic Way Secaucus, New Jersey 07094
Limited Warranty (ONLY FOR CANADA)

Panasonic Canada Inc.
5770 Ambler Drive, Mississauga, Ontario L4W 2T3

PANASONIC/TECHNICS PRODUCT—LIMITED WARRANTY

Panasonic Canada Inc. warrants this product to be free from defects in material and workmanship and agrees to remedy any such defect for a period as stated below from the date of original purchase.

Panasonic DVD Recorder One (1) year, parts and labour

LIMITATIONS AND EXCLUSIONS

This warranty does not apply to products purchased outside Canada or to any product which has been improperly installed, subjected to usage for which the product was not designed, misused or abused, damaged during shipping, or which has been altered or repaired in any way that affects the reliability or detracts from the performance, nor does it cover any product which is used commercially. Dry cell batteries are also excluded from coverage under this warranty.

This warranty is extended to the original end user purchaser only. A purchase receipt or other proof of date of original purchase is required before warranty service is performed.

THIS EXPRESS, LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, EXCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

In certain instances, some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, or the exclusion of implied warranties, so the above limitations and exclusions may not be applicable.

WARRANTY SERVICE

For product operation and information assistance, please contact your Dealer or our Customer Care Centre at: Telephone #: (905) 624-5505 Fax #: (905) 238-2360 Web: www.panasonic.ca

For product repairs, please contact one of the following:

● Your Dealer who will inform you of an authorized Servicentre nearest you.
● Our Customer Care Centre at (905) 624-5505 or www.panasonic.ca
● A Panasonic Factory Servicentre listed below:

Richmond, British Columbia
Panasonic Canada Inc.
12111 Riverside Way
Richmond, BC
V6W 1K8
Tel: (604) 278-4211
Fax: (604) 278-5627

Calgary, Alberta
Panasonic Canada Inc.
6835-8th St. N. E.
Calgary, AB
T2E 7H7
Tel: (403) 295-3955
Fax: (403) 274-5493

Mississauga, Ontario
Panasonic Canada Inc.
5770 Ambler Dr.
Mississauga, ON
L4W 2T3
Tel: (905) 624-8447
Fax: (905) 238-2418

Lachine, Québec
Panasonic Canada Inc.
3075, rue Louis A. Amos
Lachine, QC
H8T 1C4
Tel: (514) 633-8684
Fax: (514) 633-8020

IF YOU SHIP THE PRODUCT TO A SERVICENTRE

Carefully pack and send prepaid, adequately insured and preferably in the original carton. Include details of the defect claimed, and proof of date of original purchase.
Guía de referencia rápida en español

Conexión de un televisor y videograbadora

Consulte la ilustración que aparece en la página 7 de la sección en idioma inglés.

- Las conexiones del equipo descritas son ejemplos.
- Antes de hacer la conexión, apague todos los equipos y lea los manuales de instrucciones apropiados.
- El equipo periférico y los cables opcionales se venden por separado a menos que se indique lo contrario.

Español

Aviso

indica accesorios incluidos.

Aviso

Consulte la ilustración que aparece en la página 8 de la sección en idioma inglés.

Aviso

Las señales de vídeo que pasan a través de videograbadoras afectarán a los sistemas de protección del copyright, y la imagen no se mostrará correctamente en el televisor.

No conecte la unidad a través de una videograbadora. Si lo hace, podría afectar a los sistemas de protección del copyright, y la imagen no se mostrará correctamente en el televisor.

El terminal S-VIDEO OUT proporciona una imagen más viva que el terminal VIDEO OUT. (Los resultados reales dependen del televisor.)

¿Debe usar el terminal AUDIO/VIDEO OUT o el RF OUT?

Si su receptor de TV por cable/satélite tiene terminales AUDIO/VIDEO OUT y RF OUT, le recomendamos conectar el terminal AUDIO/VIDEO OUT al terminal L3 de esta unidad. Esta conexión proporciona la mejor calidad de imagen.

Ajuste del IR Blaster

Coloque el IR Blaster delante del sensor de señales del receptor de TV por cable/satélite.

- Lea las instrucciones del receptor de TV por cable/satélite relacionadas con la posición del sensor de señales.
- Si es necesario, utilice cinta con adhesivo en ambas caras (incluida) para asegurar el IR Blaster a una superficie plana.
- Eso Superficie de base de televisión
- Receptor de TV por cable/satélite
- Si despega la cinta adhesiva, la superficie podrá dañarse.

Por favor, limite el número de conexiones con el receptor de TV por cable/satélite a una señal IR transmitida a través del cable IR. Esto le permite usar el mando a distancia de la unidad para controlar el receptor de TV por cable/satélite.

- Use L3 (no L1) si está usando el cable de audio/video para la conexión.
- Rojo Blanco Amarillo
- Conecte al terminal RF IN o L3 de esta unidad.
- Cable de audio/video
- Cable de S-Video
- Receptor de TV por cable/satélite
- De la antena to toma de TV por cable

* Para más información de las conexiones (= izquierda)

■ 75 Cable coaxial Q

La señal de imagen y sonido procedente de este aparato no pasa a través del cable coaxial de 75 Q al televisor. Asegúrese de conectar uno de los terminales siguientes de este aparato al televisor: el terminal AUDIO/VIDEO OUT, el terminal S-VIDEO OUT o el terminal COMPONENT VIDEO OUT. Si el televisor no tiene ninguno de estos terminales, consulte a su concesionario local.

No conecte la unidad a través de una videograbadora. Las señales de vídeo que pasan a través de videograbadoras afectarán a los sistemas de protección del copyright, y la imagen no se mostrará correctamente en el televisor.

■ Cuando conecte a un televisor con videograbadora incorporada, conecte a los terminales de entrada del televisor, no a los de la videograbadora.
Preparación del sistema de guía de TV en pantalla

Consulte la ilustración que aparece en la página 10 de la sección en idioma inglés.

Después de enchufar la unidad en una toma de CA de casa y pulsar [DVD POWER] para encender la unidad por primera vez, ésta inicia la preparación del sistema de guía de TV en pantalla y establece los canales.

En el sistema de guía de TV en pantalla sólo se muestra inglés. No se pueden mostrar otros idiomas.

Preparación

1. Encienda el televisor y seleccione la entrada de vídeo apropiada.
2. Pulse [DIRECT NAVIGATOR] para seleccionar “Set up TV Guide On Screen now” y pulse [ENTER].
3. Ajuste lo siguiente:
   - País (EE.UU./Canadá)
   - Código postal
   - Servicio de TV por cable/satélite
   - Receptor de TV por cable/satélite
   - Código de señal IR
   - Canales de conexión del receptor de TV por cable/satélite
   - Marca del receptor de TV por cable/satélite
   - Asegúrese de que el receptor de TV por cable/satélite esté encendido.
4. Pulse [DVD POWER].
5. Prepare el entorno de funcionamiento de su televisor siguiendo los mensajes de la pantalla.
   - Nueva el cursor con [4, 5, 6, 7] y pulse [ENTER] para confirmar.
   - Pulse los botones numéricos para introducir números.
7. Consulte las indicaciones de la parte inferior de la pantalla.
8. Pulse [4, 5, 6, 7] para seleccionar “Set up TV Guide On Screen now” y pulse [ENTER].

Grabación y reproducción

Consulte la ilustración que aparece en las páginas 16 y 24 de la sección en idioma inglés.

■ Grabación de programas de televisión

2. Si selecciona la unidad DVD
   - Pulse [OPEN/CLOSE] en la unidad principal para abrir la bandeja e introducir el disco.
3. Si aparece la lista de programas de televisión
   - Pulse [DIRECT NAVIGATOR] para seleccionar el canal y pulse [ENTER].
5. Pulse [REC] para empezar a grabar.

■ Reproducción mientras usted está grabando

Reproducción con presecución

Puede empezar a reproducir desde el comienzo del título que está grabando.
   - Pulse [ ] (PLAY).

Grabación y reproducción simultáneas

Puede reproducir un título grabado previamente.

1. Pulse [DIRECT NAVIGATOR].
2. Pulse [4, 5, 6, 7] para seleccionar un título y pulse [ENTER].
3. Para salir de la Title View, pulse [DIRECT NAVIGATOR].

Time Slip

Usando el ajuste de tiempo puede especificar la escena deseada del título grabado o del título que está siendo grabado y ver ambas en dos ventanas de la pantalla.

1. Pulse [TIME SLIP].
2. Pulse [4, 5, 6, 7] introducir el tiempo y pulse [ENTER].

■ Reproducción de discos

2. Si selecciona la unidad DVD
   - Pulse [OPEN/CLOSE] en la unidad principal para abrir la bandeja e introducir el disco.
3. Pulse [ ] (PLAY).

Para detener

Pulse [ ].

Para hacer una pausa

Pulse [ ].
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